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KANSAS UNIVERSITY SCIENCE BULLETIN.

VOL. III, No. 6. OCTOBER, 1905. {WHOLE SERIES, VOL. XIII, No 6.

DIPTERA AFRICANA, I.

BY C. F. ADAMS.

IN my "Dipterological Contributions" (K. U. Science Bulletin, vol. II, No. 2, p. 21, 1903), I mentioned this material and described seven new species from it. I also promised at that time to give the whole collection some study and finally report thereon. It is now my pleasure to offer this paper as the first part of the work. The second part will be on the Muscidæ Calyptratæ,* which are now in my hands for study. This represents all of the material which is mounted, there being a large quantity still unmounted, mostly the minute forms. I hope to have the pleasure some time of working up this unmounted material and offering it as a third part of this series. I am fully aware of the difficulties met with and of the carefulness to be exercised in undertaking a work of this kind. It is no easy task to work successfully in one's own fauna, and therefore it is with some timidity that I offer this contribution on exotic material. But I have done my best to free it of errors, and if any are found herein, I beg kind indulgence or favor at the hands of my confreres.

As stated in the above-mentioned paper, this material was collected near Salisbury, Rhodesia, South Africa. The material, not only of the Diptera but of all the orders, shows that my friend Mr. Frank L. Snow is a diligent collector, and the Kansas University is fortunate in receiving the results of his trip to Africa. In due respect to his generosity, I name one of the species in his honor.

*Since this was written conditions have changed. Some of the manuscript intended for the second part is included in this paper.

I take pleasure in acknowledging my indebtedness to Dr. F. H. Snow and to Dr. S. W. Williston. Without the favors received from these two friends the work would have been impossible.

TABANIDÆ.

HINEA, gen. nov.

Belongs to Pangoninæ. First and second joints of antennæ short, first twice as long as second; third joint with five annuli, first one longest and with a long basal process. Last joint of palpi very large and crescent-shaped. Proboscis straight, about as long as height of head. Face short, convex. Front depressed; its angle with occiput is smaller than in most Tabanidæ. Thorax and abdomen somewhat compressed. Wings considerably longer than the abdomen, first posterior cell open. Type, following species.

Hineia flavipes, n. sp.

Female: Black; front, antennæ, palpi, proboscis, except tip, legs, and tip of abdomen, yellow. Cheeks, occiput and pleuræ with sparse black pile; pile of legs short and yellow. The four hind coxæ are dark brown. Halteres black, knobs white. Wings black, a small hyaline spot in apex of first basal cell. Length, 16 mm.; of wing, 14 mm.

One specimen; December. This genus is dedicated to my friend Prof. Jas. S. Hine, who is doing so much for our knowledge of this family.

TABANUS.

(Linne, Fauna Suecica; 1761.)

Tabanus sagittarius.

Tabanus sagittarius Macq., Dipt. Exot., I, p. 123; Walker, List Dipt., pt. V, Suppl. 1, p. 228 (1850).

Tabanus socius Walker, l. c., pt. T, p. 160.

Tabanus serratus Loew, Dipteren-Fauna Südafrika's, 39, tab. 1, fig. 21.

Eight specimens; November and December. The above synonomy is from Miss G. Ricardo.

Tabanus latipes.

Tabanus latipes Macq., l. c. I, p. 119; Loew, l. c., p. 36.

Tabanus latipes Walker, l. c., pt. I, p. 236; pt. V, Suppl. I, p. 328 (1854).

Tabanus fenestratus Walker, Zoologist, VIII, app. 67 (1850); List, V, Suppl. 1, p. 219 (1854).

Tabanus africanus Grey.

Two specimens; December. The above synonomy after Miss Ricardo.

Tabanus tarsalis, n. sp.

Female: Eyes bare; first two joints of antennæ yellow, upper anterior angle of each, and the third joint wholly, black; face, cheeks, occiput and front thickly grayish pollinose, tubercle on lower part of latter reddish, reaches from eye to eye, and sends a slender projection upwards to middle of front, cheeks and lower part of face with long whitish pile; palpi very light yellow, almost white, bearing a few minute black bristles; proboscis black. Thorax reddish brown; mesonotum with three gray pollinose vittæ, remainder with a thin cast of gray dust, lateral margins, in front of wings, fringed with black pile, behind the wings with white pile; pleuræ with white pile; haltere brownish, knobs white. Abdomen dark brown, with three gray vittæ composed of subtriangular spots on each segment, those of lateral vittæ scarcely attaining the anterior margin of the segment; pile white; venter obscurely reddish brown, pile of last two segments black. Legs reddish yellow, tip of anterior tibiæ and all tarsi, except the base of the hind metatarsi, black; pile of femora and tibiæ white. Wings hyaline, base and costal margin to tip of first vein fuscous, veins at outer ends of basal cells and most of the longitudinal veins on basal half of wing bordered with brown; anterior branch of third vein without appendix. Length, 17–19 mm.

Four specimens; February.

ASILIDÆ.

Neolaparus.

(Williston, Psyche, 255; 1885.)

Laparus pulchriventris.

Laparus pulchriventris Loew, Dipteren-Fauna Südafrika's, 58 (130); 1860.

One specimen; January.

Laxenecera.

(Macquart, Dipt. Exot., I, 2, 77; 1838.)

Laxenecera albicincta.

Laxenecera albicincta Loew, Dipteren-Fauna Südafrica's, 122 (194); 1860.

Three specimens; January.

Laxenecera zonata.
Laxenecera zonata Loew, Dipteren-Fauna Südafrika's, 123 (195); 1860.

Three specimens; January.

Laxenecera sp.?

A small, poorly preserved specimen. It agrees fairly well with the description of *L. mollis* Loew, but its state of preservation does not admit of positive identification.

Promachus.

(Loew, Linn. Ent. III, 390; 1848.)

Promachus æqualis.
Promachus æqualis Loew, Dipteren-Fauna Südafrika's, 127 (199); 1860.

One specimen; January.

Promachus flavibarbis, n. sp.

Female: Head yellow pollinose, in certain lights sides of face and posterior orbits silvery; front with yellow hairs on extreme lower part of sides and on vertex, sides with bristly-like hairs; face with only yellow bristles; palpi and proboscis black, pile of former yellowish, of latter white; cheeks with a fuscous tinge; occiput with white pile and with a row of black bristles on each side above; antennæ black, first two joints reddish and with short yellow pile. Mesonotum brown and with a median gray line, humeri and lateral margins yellowish pollinose, pile largely short and black, on anterior margin whitish, on posterior margin longer, and white and black intermixed, two rather strong presutural bristles, three postalar, one of which is rather weak, two supraalar, and three dorsocentrals on each side; scutellum yellowish pollinose, pile and bristles yellowish white, except a large black bristle on each side; pleuræ grayish pollinose, pile white, two white and two black bristles on upper margin of mesopleuræ; halteres yellow, tuft in front of them yellowish white. Abdomen yellowish pollinose, second, third, fourth and fifth segments with a large subquadrate, basal, black spot, pile yellowish, on first segment rather long and white, sixth and following segments nearly wholly shining black; venter grayish yellow, with white pile, each segment with a small, oval, reddish bare spot centrally. Coxæ grayish pollinose, front pair thickly, middle and hind pairs sparsely, white pilose, two hind pairs with a few strong yellowish bristles. Legs black, under side of femora, four an-

terior tibiæ, except their tip, hind tibiæ, except anterior surface, and upper surface of four anterior metatarsi reddish, pile white, bristles black, a few on under side of femora and on tarsi whitish. Wings hyaline, veins fuscous, first submarginal cell with a narrow gray streak. Length, 27 mm.

One specimen; October.

Promachus apicalis, n. sp.

Male and female: Head yellowish pollinose; bristles of sides of front black, the strongest ones of the mystax light yellow, remainder and those under antennæ black; palpi and proboscis shining black; sparsely light-colored pilose; pile of occiput white, a row of black bristles along posterior orbits; cheeks shining black; antennæ black, first two joints with short black hairs. Thorax grayish yellow pollinose, prothorax with a transverse row of black bristles; mesonotum with a median brownish line, which is bordered laterally by two broader, velvety-black vittæ, a large sublateral, velvety-black spot, divided by the suture, and a smaller, similarly colored one just laterad to dorsocentrals on posterior part; two presutural, two supraalar, two postalar, and four dorsocentral bristles, pile very short, black, in the female a few white ones posteriorly; scutellum with an apical pair of black bristles, pile yellowish; pleuræ with sparse, very minute, yellowish pile, mesopleuræ without bristles above; halteres yellowish. Abdomen black, uniformly grayish yellow pollinose, pile short, yellowish, each segment with a pair of yellowish bristles on each side. Legs black, short pile yellowish, with about an equal number of black and whitish bristles. Wings with a light fuscous tinge, last submarginal cell, on an average, about as wide as the first, apex of of wings gray opaque. Length of male, 16 mm.; of female, 18 mm.

Three specimens; January.

Promachus solus, n. sp.

Female: Face largely yellow pollinose, silvery on sides, bristles of mystax yellowish white and black, long pile below antennæ white; front yellowish pollinose, bristly hairs black; antennæ black, first two joints with short yellowish pile; palpi and proboscis black, bristles of former white and black, pile of latter white; cheeks largely shining black; occiput gray polli-

nose, pile white, and with a row of black bristles on each side above. Mesonotum brown pollinose, with a median gray vitta, humeri reddish, region above humeri, lateral margins to just behind suture, and the borders of the median, golden yellow pollinose, hind part of mesonotum largely gray pollinose, two presutural, two supraalar and two postalar bristles present, two rows of bristly hairs replace the dorsocentrals on mesonotum; scutellum gray pollinose, bristles black, pile white; pleuræ grayish yellow pollinose anteriorly, gray posteriorly, pile white and black, mesopleuræ without bristles on upper part; halteres lemon yellow. Abdomen black, lateral and hind margins narrowly gray pollinose, and fringed with white pile, pile of darker portion of dorsum black, venter gray, with white pile. Coxæ gray pollinose, pile white, middle pair with a single black bristle, legs reddish yellow, pile white, a spot on under side of femora, knees, tips of tibiæ, tarsi and all bristles black. Wings hyaline, first submarginal cell with a slender gray streak. Length, 15 mm.

One specimen; June.

Promachus negligens, n. sp.

Male and female: Very similar to *P. flavibarbis* but is larger, and the general color of the pollen, except on the face, is gray; the antennæ are wholly black, the face is furnished with some black bristles; palpi of female with black and whitish bristles, of male yellowish white; occiput of female without black bristles above. Mesonotum reddish in ground color on shoulders and margins; scutellum with black bristles, pile white; mesopleuræ without bristles on upper part in the male, in the female with three strong and two weak black ones. Pile of black spots of abdomen black, three black bristles among pile on sides of first segment of male; hypopygium with a tuft of white pile above. Middle coxæ with several whitish bristles, hind coxæ and all legs with black bristles, pile white, of the male the anterior surface of the four front femora, apex of hind femora, tip of tibiæ, and tarsi wholly black, legs of female dull red, tips of femora, tibiæ and tarsi wholly black. Wings hyaline, first submarginal cell of female with a faint streak of gray. Length: Male, 26 mm.; female, 31 mm.

Three specimens; November and February.

SISYRNODYTES.

(Loew, Neue Beiträge, IV, 40; 1856.)

Sisyrnodytes major, n. sp.

Male and female: Black, shining, white and brownish pilose. Mesonotum and dorsum of abdomen finely punctulate. Bristly hairs of first two antennal joints white, base and tip of antennal style reddish yellow; pile of palpi black; pile of lower part of face, front and upper part of occiput yellowish white; ocellar tubercle with long, white, bristly hairs. Pile of thorax white and brown intermixed, a narrow median line on anterior part composed wholly of white pile, below and behind base of wings a large tuft of light brownish pile; halteres yellowish, knobs black. A tuft on sides of first abdominal segment, and pile of posterior and lateral margins of all segments white pilose; long sparse pile of venter white. Bases of all tibiæ reddish in ground color, pile of legs white; bristly hairs of femora, bristles of the four front tibiæ and basal half of hind tibiæ yellow, remaining bristles, or spines, black. Wings hyaline, all veins broadly bordered with brown, especially center of wing, anterior branch of fourth vein with a stump on anterior side near base, costal border fringed with short white hairs. Length of male, 10 mm.; female, 12 mm.

Three specimens; September.

BOMBYLIIDÆ.

BOMBYLIUS.

(Linne, Fauna Suecica; 1761.)

Bombylius analis.

Bombylius analis Fabr., Ent. Sust., IV, 408, 5.
Bombylius discoideus Fabr., l. c., IV, 409, 6.
Bombylius thoracicus Fabr., Syst. Antl., 130, 9.
Bombylius analis Wied., Zool. Mag., II, 42.

One female and four males, collected during February.

HYPERALONIA.

(Rondani, Archiv. Zool., III, 57; 1863.)

Hyperalonia vittata.

Hyperalonia vittata Ricardo, Ann. a, Mag. Nat. Hist., vol. 7, 7th Ser., No. 37, p. 104; 1901.

Three specimens; September.

Systropus.

(Wiedemann, Nova Dipt. Genera; 1820.)

Systropus snowi, n. sp.

Male and female: Antennæ black, basal four-fifths of first joint reddish; front and face lemon yellow, in certain lights silvery; proboscis black, palpi yellow, linear; cheeks and occiput black, grayish pollinose. Thorax black, whitish pile very short; mesonotum with the lateral margins reddish yellow; this color occupies the lateral third of anterior margin of mesonotum, then narrows considerably at a point midway between humeri and wings, widens at base of wings and reaches posterior margin; a spot above front coxæ lemon yellow; pleuræ reddish centrally; halteres reddish, knobs black on one side, lemon yellow on the other. Abdomen black, second, third, fourth and basal half of fifth segments, except a stripe on dorsum of each, reddish yellow. Legs reddish; front coxæ, except base and apex, last four joints of front and middle tarsi and hind tibiæ and tarsi, blackish; outer side of front and middle tibiæ and metatarsi lemon yellow, in certain lights silvery. Wings with a uniform fuscous tinge; two submarginal cells present. Length, 19–20 mm.

Twenty-three specimens; January. Dedicated to Mr. Frank L. Snow, son of Dr. F. H. Snow, in deference to his interest and energy in collecting insects while in Africa. Not only Diptera but all orders yielded bounteously to his net, and the collections of the Kansas University have been greatly enriched by the addition of this splendid material.

EMPIDÆ.

Stilpon.

(Loew, Neue Beiträge, VI, 34 and 43; 1859.)

Stilpon obscuripes, n. sp.

Female: Black, in large part shining. Front gray, with parallel sides; vertex with two pairs of forwardly directed bristles; occiput grayish subshining; eyes emarginate opposite antennæ, and narrowly separated below, face receding; antennæ black, pubescent, second joint with a rather long bristle on under side at apex, third joint short, oval, arista subapical and about three times as long as the antennæ; mouth-parts black, proboscis much shorter than height of head, directed

somewhat backward, palpi clavate, bearing a few yellow bristles. Mesonotum shining, bearing short yellow pile, and on posterior two-thirds longer black bristles, pleuræ partially covered with grayish pollen, scutellum with an apical pair of bristles and a smaller subapical bristle on either side; halteres yellow. Abdomen short, contracted, sparse pile yellowish white, ovipositor simple, compressed. Coxæ and legs largely shining black, tip of coxæ, extreme base and tip of femora, tibiæ except broadly in the middle, tarsi except last two joints, of a yellowish cast. Wings hyaline, anal cell wholly absent, first basal cell two-thirds as long as second, first vein joins costa slightly beyond a point opposite apex of second basal cell, third and fourth veins parallel, costa reaches tip of fourth vein. Length, 2 mm.

Two specimens; October.

Elaphropeza.

(Macquart, Dipt. du Nord de France, I; 1827.)

Elaphropeza dispar, n. sp.

Male and female: Shining yellow. Eyes contiguous above and below antennæ, slightly emarginate opposite them; occiput and vertex black, former broad and with fine yellow pile, and a pair of rather strong bristles on top, latter with a forwardly inclined pair of yellow bristles just in front of the ocelli; first two joints of antennæ yellow, second joint with small yellow bristles at apex, third joint lanceolate-elongate, brownish black, arista terminal, about a third longer than the antennæ, sparsely pubescent; mouth-parts yellow, proboscis much shorter than height of head, palpi clavate, bearing a few short yellowish bristles. Thorax wholly yellow, sparsely yellow pilose, mesonotum with three yellowish bristles on sides posteriorly, and a pair dorsally just in front of the scutellum; scutellum yellow, with an apical pair of yellow bristles; halteres yellow. Abdomen yellow, third segment black, as long as first and second segments together, hypopygium yellow, with yellow pile, lamellæ large, median filament arcuate, mostly concealed. Legs yellow, extreme tip of femora, tibiæ, and last joint of tarsi brownish, pile yellow. Wings hyaline, veins brownish, anal cell wholly absent, second basal cell twice as long as the first, tip of first vein

opposite apex of second basal cell, costa reaches tip of fourth vein. Length, 2 mm.

Four males and six females; April, May, and June.

Platypalpus.

(Macquart, Dipt. du Nord de France, 94; 1827.)

Platypalpus univittatus.

Platypalpus univittatus Loew, Dipteren-Fauna Südafrika's, (341) 269.

One damaged specimen in the collection agrees partially with Loew's description. The last two joints of the antennæ and a part of the wings are gone, and its certain identification is impossible. The proboscis and a spot above the middle coxæ are black.

Empis.

(Linne, Fauna Suecica; 1763.)

Empis validis, n. sp.

Male: Black, subshining. Face bare, shining, occiput and cheeks thinly gray pollinose, eyes contiguous above antennæ, antennæ black, third joint tapering, style nearly half as long as third joint, proboscis shining black, twice as long as height of head. Thorax uniformly subshining, a sprinkling of gray pollen on pleuræ; bristles longest along sides of mesonotum, black; halteres yellowish at base, knobs brown. Abdomen a little more shining than the thorax, pile black; hypopygium small, concealed in the last ventral segment. Legs black, mostly shining; basal half of all tibiæ yellow; front and hind metatarsi somewhat incrassate, the intermediate ones of usual size; pile and bristles black, pulvilli yellow. Wings hyaline, veins light brown; in venation somewhat similar to the figure for *E. perpendicularis* Loew, differing by having the anterior branch of third vein straight, and forming with it a right angle, the discal cell is a little shorter, and the vein between the second and third posterior cells is nearer to the fourth vein. Length, 3.25 mm.

One specimen; April.

LONCHOPTERIDÆ.

Lonchoptera.

(Meigen, Illig. Mag., II, 272; 1803.)

Lonchoptera africana, n. sp.

Female: Head yellow; ocellar dot black; besides the ocellar and a pair of verticals there is a pair of backwardly curving bristles centrally on anterior part of front; antennæ yellow, first and second joints with a circle of black bristles apically, tip of third joint, with the arista, black; mouth-parts yellow, oral margin bearing several strong black bristles; a few bristles along posterior orbits white. Thorax reddish yellow; mesonotum with a median longitudinal black stripe, and the lateral margins likewise of the same color; two small humeral, one posthumeral, one notopleural and six dorsocentral bristles on each side; the latter are placed in two rows, with a single bristle placed between them; the inner row has three and the outer has two; scutellum with a median black line, and an apical pair of bristles; pleuræ and halteres yellow. Abdomen yellow, with a broad, dorsal, longitudinal band and the narrow lateral margins blackish. Legs yellow, the anterior tarsi wholly and the last joint of the remaining tarsi black. Wings hyaline, with a faint yellowish tinge; venation normal. Length, 3.2 mm.

One specimen; April. Close to *L. lutea* Panz., but differs principally in the coloration of antennæ and the lateral margins of the mesonotum and abdomen.

PHORIDÆ.

Aphiochæta.

(Brues, Monograph of the North American Phoridæ, 337.)

Aphiochæta? n. sp.?

An imperfect female specimen which I believe belongs to this genus, and also to represent a new species, but the four posterior legs are gone; so I cannot speak with certainty for either case. The front is brownish black, subopaque, with only one pair of proclinate bristles on anterior part, otherwise its chætotaxy is normal; antennæ, face and mouth-parts are yellowish, arista pubescent. Thorax yellow, one posthumeral, three small bristles just in front of base of wing, and one dorsocentral on each side; scutellum with a single pair of bristles; halteres yellow. Abdomen reddish yellow, ovipositor black, subopaque.

The legs, so far as present, are light yellow. Wings hyaline, costa reaches almost to the middle of the wing, distinctly ciliated, third vein forked, tip of first vein ends at about two-thirds the distance between the humeral and tip of third vein, fifth and sixth veins divergent apically. Length, 1.2 mm.

April.

SYRPHIDÆ.

Melanostoma.

(Schiner, Wiener Ent. Monatschr., IV, 213; 1860.)

Melanostoma bituberculata, n. sp.

Male and female: Head black, mostly shining; eyes, in male, with large facets above; front of female with cross band of gray pollen; face sparsely gray pollinose, with two small, but distinct, tubercles in center; cheeks and occiput grayish pollinose; halteres yellow. Abdomen brownish black; antennæ yellow, apex of third joint blackish above, arista yellow; mouth-parts brownish black. Thorax black, shining, pile short and light; sides of mesonotum and pleuræ lightly gray pollinose; first segment immaculate, second with an ovate yellow spot on each side, attaining the lateral margin at the anterior third of the segment, but not in contact with either anterior or posterior margins; third and fourth segments each with a pair of rather long spots which are broadly in contact with the anterior margin, and also with the lateral margin at the anterior angle; fifth segment with a pair of short but similarly colored spots; in one male specimen the spot is in contact with nearly the whole lateral margin. Legs, except base of coxæ and last two joints of hind tarsi, wholly yellow. Wings hyaline. Length, 7 mm.

Six specimens; May and June.

Eristalis.

(Latreille, Hist. Nat. des Crust. et des Ins., XIV, 363; 1804.)

Eristalis longicornis, n. sp.

Female: Vertex subshining black, black pilose; middle third of front yellowish pollinose, and yellowish and black pilose; lower third and antennal protuberance subshining black, sparsely black pilose. Eyes pilose above; with small black dots, most numerous and mostly fused on posterior half. Face black, grayish pollinose, light yellow pilose; median vitta

broad, shining; a broad stripe from lower angle of eye to oral margin shining black. Cheeks largely shining black; light pilose. Occiput black, grayish pollinose and white pilose. Proboscis black, long as height of head. Antennæ black, third joint as long as first and second together, arista yellow, about as long as third joint. Thorax black, brownish pollinose, sparsely so back of suture, pile yellowish; scutellum yellow translucent, yellow pilose on base and margin, pile of dorsum black. Halteres yellow. First segment of abdomen black, yellow on sides, with grayish pollen; second segment yellow, narrowly bordered anteriorly with black, a broader band on hind margin slightly projecting forward in the middle; third segment yellow on basal half, subopaque black on apical half; fourth and fifth segments wholly subopaque black; venter yellow, second and third segments with a black spot on lateral margin, fourth and sixth segments wholly black. Femora shining black, tips of tibiæ, anterior tarsi, last four joints of middle tarsi, and last joint of hind tarsi fuscous. Wings hyaline. Length, 13 mm.

One specimen; February.

Eristalis æqualis, n. sp.

Female: Front black, grayish pollinose, largely black pilose, vertex subshining, a small tubercle above base of antennæ shining black; eyes sparsely pilose above, with four dark brown, vertical stripes, between which are small dark brown spots, most numerous on upper half of eye, in which region the facets are scarcely larger than on lower half of eye; face black, grayish pollinose, yellowish pilose, with three shining black vittæ; a broad stripe from lower corner of eye to oral margin, and cheeks largely, shining black; occiput subshining black, grayish pollinose; antennæ reddish yellow, upper margin and tip of arista black. Thorax brownish pollinose, dorsum with four shining black vittæ, each of which is bordered with a velvety-black line, pile yellowish; scutellum yellowish translucent, with yellow pile; halteres yellow. First segment of abdomen yellow, a central triangle and a small oval oblique spot on each side black; second segment yellow, a narrow black band on anterior margin, a large semicircular spot occupying the apical half, shining on posterior edge; third segment largely

shining black, anterior border yellow; fourth segment black, an oval spot on each side opaque, just anterior to which is a convex transverse grayish sheen; fifth segment wholly shining black. Femora, except extreme tip, posterior tibiæ centrally, shining black; tips of tarsi fuscous; otherwise the legs are yellow. Wings hyaline, marginal cell closed in wing margin. Length, 10 mm.

One specimen; December.

Eristalis communis, n. sp.

Male: Eyes pilose above, with five vertical, blackish brown stripes, facets on upper half of eye larger than on lower; vertical triangle black, subshining, with black pile, frontal triangle black, subshining in the middle, yellowish gray pollinose on sides, pile of sides yellowish, of the middle black; face black, yellowish gray pollinose, a short median line over facial tubercle, and one on each side of face shining, pile yellowish; cheeks yellow, subshining, pile light yellow; occiput black, light gray pollinose, pile almost white; antennæ black, lower margin, and arista, yellowish, latter bare. Thorax brownish pollinose, with four bronze, subshining vittæ, pile yellowish; scutellum yellowish translucent, broadly on base and margins yellow pilose, black pilose centrally; halteres yellow; pleuræ subshining. First segment of abdomen yellow, grayish centrally; second segment yellow, the basal black border not very broad, attenuated laterally, apical black border likewise not very broad, scarcely attenuated laterally, shining on posterior edge, a light brown spot in center segment; third segment yellow, apical third blackish violaceous, largely shining and extending forward slightly in center; fourth segment wholly blackish violaceous, brownish pollinose and opaque basally; hypopygium shining blackish violaceous; venter yellow, second and third segments each with three brownish spots, fourth segment blackish. Femora and hind tibiæ shining metallic fuscous; tip of anterior tibiæ and last three joints of all tarsi fuscous, otherwise tibiæ and tarsi yellowish. Wings hyaline.

Female: Pile of front largely black. Apical half of third abdominal segment blackish violaceous, on basal half is a transverse, grayish pollinose band; fourth segment also with a simi-

ar band, both ends of which bend backward; venter of third egment wholly black; otherwise as in male. Length, 13 mm.

Three specimens; September.

ristalis dissimilis, n. sp.

Male: Eyes contiguous above, brownish pilose, which is most rominent above, and with numerous small blackish spots; ertical triangle black pilose; front and face black, grayish ollinose and white pilose, facial tubercle and oral margin shinng yellowish, sides of face on lower half nearly devoid of ollen; cheeks black, mostly shining; occiput yellowish-gray ollinose; proboscis shining black; antennæ yellow, upper margin brownish black, brownish arista bare. Thorax yellowishgray pollinose; mesonotum with four bronze, subshining vittæ; ile light yellow; scutellum yellowish translucent, pile of base nd margin light yellow, that of the dorsum black; halteres ellow; pleuræ largely subshining black. First abdominal segnent gray pollinose, yellowish on sides, second segment yellow, vith an opaque, black cross-band on base attenuated laterally, he apical cross-band is not attenuated laterally, is narrower nd opaque black except centrally along posterior margin, where t is shining bronze, in most specimens the two bands are nearly onnected centrally by a brownish longitudinal vitta; third egment yellow, posterior margin broadly subshining black, a rown spot centrally on anterior part; fourth segment shining lack, anterior margin, except laterally, reddish yellow, back f this is a narrow, yellowish-gray pollinose, transverse band, ometimes interrupted in the middle; hypopygium shining lack; pile of abdomen yellow, on dorsum of first segment, and ateral margins of remaining segments, white. Legs shining lack, base of femora indistinctly, knees, basal two-thirds of he four anterior tibiæ, base of hind tibiæ narrowly, and the arsi, except the third and fourth joints of the four anterior feet nd last three joints of hind feet, yellow; pile of femora whitish, ifferent parts of tibiæ and tarsi covered with pile of the same olor. Wings hyaline, veins brownish, stigma small. Length, 0 mm.

Six specimens; September.

Eristalis analis.

Eristalis analis Macq., Dipt. Exot., II, pt. 2, p. 36; 1842.

Male and female specimens agreeing with the description of Macquart, but present the following additional characters: On the mesonotum between the wings there is a broad transverse area which is almost wholly devoid of pollen, causing a transverse vittate appearance. The fourth abdominal segment, in each sex, has three transverse pollinose bands; the two basal ones are gray, the apical one is yellowish gray.

Five specimens; December.

Eristalis (Megaspis) curtus.

E. (Megaspis) curtus Loew, Dipteren-Fauna Südafrika's, (391) 319; 1860.

Ten specimens of this beautiful species, collected during September and January. The facets of the upper half of the eye, in the male, are larger than those of the lower half.

Eristalis (Megaspis) capito.

E. (Megaspis) capito Loew, Dipteren-Fauna Südafrika's, (393) 321; 1860.

Ten specimens; January. Like the preceding species, the eyes of the male have large facets above.

Syritta.

(St. Fargeau et Serville, Encycl. Meth., X, 808; 1825.)

Syritta pipiens.

Musca pipiens Linne, Fauna Suecica, p. 1822; 1761.

One specimen; September.

Rhingia.

(Scopoli, Entom., Carniolica, 358; 1763.)

Rhingia cœrulescens.

Rh. cœrulescens Loew, Dipteren-Fauna Südafrika's, 302 (374); 1860.

One specimen; January.

PIPUNCULIDÆ.

Pipunculus.

(Latreille, Hist. Nat. des Crust. et des Ins., 1804.)

Pipunculus abdominalis.

Pipunculus abdominalis Loew, Ofv. K. Vet. Akad. Forhandl., xiv, 374, 3 (1857).

A male specimen, collected during May. Agrees well with Loew's description.

Pipunculus, n. sp.?

Female: Occiput, front and face opaque gray pollinose; first two joints of antennæ and arista black, third yellow, acuminate. Thorax opaque; mesonotum brownish pollinose, gray on humeri and sides, former yellowish in ground color; scutellum brownish, pleuræ, metanotum and legs feebly gray pollinose, halteres yellow. The abdomen is greased, and consequently I cannot give a complete description. In perfect material it is undoubtedly opaque, the ovipositor straight and yellow. Legs largely yellow; the coxæ, the front four femora along the superior border, the hind femora broadly in the middle, and the last joint of all tarsi black. Wings hyaline; stigma yellowish; the small cross-vein slightly beyond the junction of the first and second thirds of discal cell; third section of costa about half the length of the fourth. Length, 3.25 mm.; wing, 4.25 mm.

One specimen, collected in May. I believe that this is a new species, but owing to the discoloration of the abdomen I am unable to describe it fully.

Pipunculus glabrum, n. sp.

Male: Black, mostly shining. Eyes contiguous only for a short distance, occiput, frontal triangle, and face gray pollinose; antennæ black, third joint yellow at tip, acuminate. Thorax black, shining; the mesonotum anteriorly, and the pleuræ superiorly, subshining; humeri and halteres yellow. Abdomen shining black, in certain lights with a bronze reflection, sides and hypopygium with a faint sprinkling of gray pollen; hypopygium uncleft. Legs black, thinly covered with gray pollen, knees, extreme tip of tibiæ, and tarsi, except last joint, yellow. Wings hyaline, small cross-vein about its length in front of the middle of the discal cell, the section of the costa closing the marginal cell about a third as long as the one closing the submarginal cell. Length, 3.25 mm.; wing, 3.5 mm.

One specimen; May.

SCIOMYZIDÆ.

SEPEDON.

(Latreille, Hist. Nat. des Crust. et des Ins., XIV, 305.)

Sepedon scapularis.

Sepedon scapularis Adams, Kan. Univ. Sci. Bull., II, 46; 1903.

Two specimens; May. In my description of this species, where reference is made to the black ring on the hind femora, the term "apex" should be used instead of the word "base," the tip of the femora being black.

Sepedon ornatifrons, n. sp.

Front broader than one of the eyes, excavated, yellowish in the middle, shining bluish black at vertex and on sides; at junction of lower and middle thirds is a velvety black spot on each side, a small blackish dot centrally just above base of antennæ, a fine, hair-like, silvery line coming up from the face on each side and reaching half-way to ocelli; face yellowish, in certain lights with a silvery reflection, with a median bluish-black stripe, a similarly colored, but broader and shining, one from lower corner of eye to oral margin; cheeks yellow, with silvery reflections; occiput bluish black, mostly shining; antennæ black, first joint yellowish at tip; proboscis brownish black, palpi linear, yellow, with apex brownish. Thorax bluish black, with a thin coat of brownish dust; humeri shining, two posthumeral and one supraalar bristle present; scutellum triangular, with an apical pair of bristles; halteres yellow, knobs brown. Abdomen bluish black, with a thin coat of grayish dust. Front coxæ yellow, others brownish; femora yellow, tips black, which color is more extensive on hind femora, extending along the upper margin to the middle, hind femora not unusually thickened, tibiæ and tarsi black, base of front and middle tibiæ slightly reddish. Wings hyaline, tinged with brown along the anterior border, especially prominent distally. Length, 6 mm.

Two specimens.

ORTALIDÆ.

Pyrgota.

(Wiedemann, Auss. Zweifl., II, 581; 1830.)

Pyrgota abjecta, n. sp.

Female: Head grayish yellow; front broad as one eye, sides parallel, on anterior half with two submedian indistinctly defined, brownish vittæ which are almost contiguous anteriorly; as usual the ocelli are absent, but the ocellar dot is blackish, small ocellar bristles and a pair of small postocellar bristles present; on each side and opposite the ocellar bristles is a pair of small approximated fronto-orbitals, the single pair of vertical bristles strong. Face yellow, just below the antennæ the black median carina is sharp, and below it extends into a broad triangular flat space, this latter is yellowish except on sides. Antennæ reddish yellow, third joint tinged with brown apically. Palpi reddish yellow, proboscis sordid. Occiput yellow, a rather broad blackish vitta from upper angle of each eye to the neck, internally this is bordered by a narrow yellow line, which in turn is bordered internally by two subfused, blackish spots. Thorax yellowish; mesonotum with the reddish-brown vittæ, the middle one narrowing posteriorly and passing onto the scutellum, the lateral ones abbreviated anteriorly and interrupted at the suture, there is a small, similarly colored, spot near base of wing and reaching in front of the suture; one humeral, two notopleural, one presutural, two supraalar, one intraalar, and two dorsocentral bristles on each side; scutellum with two pairs of bristles, the apical ones discussate; pleuræ largely blackish brown, with two mesopleural, one pteropleural, and two sternopleural bristles; halteres yellow. Abdomen subopaque brown, with black bristly pile; sixth segment shining, reddish yellow apically, ovipositor yellow. Legs yellowish, with the femora largely brown. Wings fuscous, marked as follows: A hyaline spot wholly fills out the anal and second basal cells, then narrows and passes across the center of the first basal cell and enters base of marginal cell; the costal cell has two small hyaline dots; at tip of auxiliary vein a hyaline spot starts, broadens in crossing marginal and submarginal cells, narrows across the first basal cell, broadens again in the discal cell, but is here indented distally, and passes some distance beyond the fifth vein; two dots just beyond tip of first vein,

opposite these in the submarginal cell in a large hyaline spot, containing a fuscous dot, dividing on entering the first posterior cell into two branches, the distal one ending at the hind cross-vein, the first branch is very irregular in the discal cell, crosses the fifth vein just in front of hind cross-vein, then passes for a short distance toward base of wing; apically the submarginal cell contains three hyaline dots, the first posterior cell five, the second posterior cell three, and the third posterior cell four besides the ones above mentioned. Length, 7 mm.

One specimen; November.

Rivellia.

(R. Desvoidy, Myod., 729; 1830.)

Rivellia major, n. sp.

Female: Yellow, with black bristles and pile. Front plane, brownish yellow in the middle, with small black hairs most conspicuous on anterior part, orbits light yellow; ocellar bristles very minute, a fronto-orbital bristle opposite the lower ocellus, a pair of verticals and postverticals present; antennæ long, yellow, third joint acuminate, tip brownish, arista likewise; face yellow, with a median brownish stripe, gently concave; occiput and cheeks yellow, latter with a few short black, bristly hairs; mouth-parts yellow, palpi with a few short black hairs. Thorax yellow; mesonotum and scutellum reddish yellow, a humeral, two posthumeral and two supraalar bristles, scutellum with two pairs of bristles; halteres yellow. Abdomen light yellow, dorsum of first three segments reddish yellow; on the posterior margin of the third segment is a row of rather long black bristles; ovipositor shining black. Legs yellow, tarsi brownish black. Wings hyaline; the costal margin to the tip of the fourth vein is fuscous, a short indistinct fascia from tip of first vein to small cross-vein, another one from just before tip of second vein and passing over posterior cross-vein to hind border of wing, fuscous. Length, 5.5 mm.

Two specimens; October.

TRYPETIDÆ.

DACUS.

(Meigen, Syst. Beschr., VI, 21; 1830.)

Dacus africanus, n. sp.

Male: Close to *D. brevis* Coq. and *D. sigmoides* Coq., from Cape Colony. Head yellow; front reddish yellow in the middle, grayish pollinose along the orbits, ocellar dot, frontal lunule, three spots on orbits, and a spot in center of front, black, the three spots on orbit each bears a black, bristly hair; a vertical and postvertical bristle present; face straight, sloping on the sides; cheeks yellow, and furnished with a black spot below eyes; occiput yellow and reddish yellow variegated; antennæ about as long as head, yellow, tip of third joint and arista largely blackish. Thorax opaque reddish, finely scrobiculate, sparse pile whitish; humeri, a stripe beginning on upper margin of sternopleuræ, traversing the mesopleuræ, and along transverse suture to near middle of mesonotum, a spot on metapleuræ, the scutellum except the extreme base, and halteres yellow; two small spots just in front of transverse suture, two large ones behind it, a stripe just in front of the yellow of the mesopleuræ, the sternopleuræ largely, two spots on metanotum, and metapleura largely blackish; three small black bristles between humeri on anterior margin of thorax, one on side just behind humeri, one at base of transverse suture, one postalar, one intraalar, an apical pair of scutellar bristles, and one mesopleural bristle present. Abdomen reddish, finely scrobiculate, and with whitish sparse pile; third segment laterally along posterior margin with a short row of black bristles; venter yellowish. Legs light yellow; coxæ blackish at base; femora on apical fourth, tibiæ wholly, and tarsi apically, reddish yellow. Wings hyaline; a fuscous stripe along first vein, from base to apex, thence along costa to tip of third vein; and another one along lobe of anal cell to wing margin; auxiliary cell rudimentary; tips of third and fourth veins nearly straight; small cross-vein inclined forward. Length, 7 mm.

One specimen; June.

URELLIA.

(R. Desvoidy, Myod., 774; 1830.)

Urellia confluens.

Trypeta confluens Wied., Auss. Zweifl., II, 510, 56.

Three female specimens, agreeing quite well with the description; October.

Urellia peregrina, n. sp.

Male and female: Head and members yellow; occiput black, frontal orbits, anterior margin of front, face, cheeks and occiput grayish yellow pollinose; front flat, moderately broad, brownish yellow, three fronto-orbital bristles directed forward, a bristle near upper angle of eye, directed backward; apex of third antennal joint rounded, arista brownish, incrassate at base, bare. Thorax black in ground color, covered with gray pollen, pile yellow, larger bristles brownish; scutellum concolorous and with one pair of bristles; halteres yellow. Abdomen black in ground color, gray pollinose, with short yellow pile, ovipositor shining black. Legs yellow, with sparse yellow pile. Hyaline part of wings grayish; the ray from stigma to small cross-vein is nearly obliterated just before it reaches the cross-vein, latter narrowly bordered with brown, second ray arises on the second longitudinal vein and reaches the costa opposite the small cross-vein, there is a rather large hyaline spot just beyond the tip of second vein, the branches of the Y-shaped mark are broad, the base is absent in some specimens, on under side of fourth vein are three well-defined rays, two crossing the second posterior cell, one sometimes joining with the third near its middle, the third is on the posterior cross-vein, there is a remnant of another ray which arises out in the center of the discal cell, sometimes on the small cross-vein, crosses the fifth vein near its middle, but stops short of the wing margin; a large hyaline spot in base of first posterior cell. Length, 3–3.5 mm.

Thirteen specimens; October.

SAPROMYZIDÆ.

Physogenua.

(Macquart, Dipt. Exot., Suppl. iii, 60; 1851.)

Physogenua bimaculata, n. sp.

Male: Head and members yellow, shining; front broader than one eye, sides parallel, two fronto-orbitals on each side, two verticals, and a pair of small bristles behind the ocelli, ocellar bristles absent; face broad, in profile very similar to *P. nigra* Will., but a little more rounded, and the clypeus not so prominent, three small hairs on each side; third antennal joint elongate-oval, arista nearly equally pubescent on both sides; cheeks broad, bearing several black, bristly hairs. Mesonotum reddish yellow, shining, one humeral bristle, two posthumeral, one presutural, two supraalar, one postalar, three in each outer row of dorsocentrals, two in the two central rows, and a pair of prescutellar bristles; scutellum with four bristles, and two black spots on under side; pleuræ yellow, one mesopleural and two sternopleural bristles present; halteres and legs uniformly yellow, preapical bristles of tibiæ rather strong. Abdomen obscure yellow. Wings hyaline, a small spot at tip of first vein, costa terminates at tip of fourth vein, its third section one-third as long as the second, and nearly as long as the penultimate section of the fourth vein. Length, 3.7 mm.

One specimen; April.

Sapromyza.

(Fallen, Ortalidæ; 1820.)

Sapromyza africana, n. sp.

Male: Front as broad as one eye, sides parallel, yellow, with a U-shaped mark whose base is at the ocelli and its arms toward the antennæ, two fronto-orbitals, two verticals, the ocellar and a pair of small postocellar bristles present; face nearly straight in profile, the median carina indistinct, just below the antennæ, on sides opposite them, and the oral margin black, with three small bristly hairs on each side; antennæ two-thirds as long as the face, brownish yellow, third joint dark brown on outer side, elongate-oval, nearly twice as long as broad, arista nearly equally plumose on upper and lower sides; proboscis yellow, tinged with brown; cheeks and occiput yellow. Thorax opaque brown; mesonotum laterally, and

two subdorsal lines obscure yellow, one humeral, two posthumeral, one presutural, two supraalar, one postalar, three dorsocentrals, and a pair of small prescutellar bristles present; scutellum obscure yellow, brown on sides at base, with an apical and a basal pair of bristles; metanotum black; halteres yellow; pleuræ obscure brown, one mesopleural and two sternopleural bristles present. Legs yellowish brown, middle coxæ with several strong bristles, anterior femora with five long bristles on posterior margin, middle and hind femora with a row of six short, but strong, bristles on outer side of apical half, preapical bristle of tibiæ strong. Abdomen yellow, posterior angles of first segment, posterior border of following segments, a median vitta on the last three, and the hypopygium largely, black. Wings hyaline, a spot at tip of first vein, one on small cross-vein, two on second and third veins opposite hind cross-vein, the one on the second vein is the larger, another one on the third vein a little way from the tip, another opposite this one on the fourth vein, and one on the hind cross-vein, brown; costa reaches tip of fourth vein, its third section about a third as long as the second, and scarcely as long as the penultimate section of the fourth vein.

Female: Head and thorax yellow; face and cheeks light yellow; mesonotum with two subdorsal, brown vittæ reaching two-thirds way to posterior margin. Abdomen obscure yellowish brown. Otherwise as in the male. Length, 4 mm.

A specimen of each sex; February and April. At first glance one would not suspect that these two specimens represent the same species; but the form of the front, the antennæ, face, the chætotaxy of the front, thorax, and legs, and the wings in structure and markings, are identical.

Pachycerina.

(Macquart, Hist. Nat. Dipt. II, 511; 1835.)

Pachycerina vaga, n. sp.

Female: Close to *P. seticornis* Fall. Head yellow; front opaque, a little broader than one eye, with slightly divergent sides, large ocellar dot opaque black, two fronto-orbitals, two verticals, and a pair of bristles behind ocelli present, ocellar bristles absent, minute light brown spot at base of each fronto-orbital, a median brown line from ocelli to antennæ, where it

becomes transverse; face shining, with two sublateral black spots, three small bristles on lower part of sides; first joint of antennæ twice as long as second, second with a strong bristle above, third, compared with Becker's figure of *seticornis*, is not so broad at base, and less acuminate at apex, arista black; palpi black, clypeus visible; occiput with brownish line running from near upper angle of eye to neck. Thorax yellow, mesonotum with two subdorsal, two sublateral, and two lateral reddish-brown vittæ, with one humeral, two posthumeral, one presutural, two supraalar, one postalar, two rows of dorsocentrals containing three each, and a pair of prescutellar bristles, there are four rows of small bristly hairs, the two central ones between the two subdorsal vittæ; scutellum yellow, with four bristles; metanotum with two black spots, halteres yellow; pleuræ yellow, with a longitudinal brown vitta, one mesopleural, and one sternopleural bristle present. Legs yellow, tarsi fuscous. Abdomen yellow, tinged with brown. Wings hyaline, with a faint tinge of brown, cross-veins not clouded, costa reaches tip of fourth vein, its third section is about one-third as long as its second, and a little shorter than the penultimate section of the fourth vein. Length, 3.2 mm.

Two specimens. April.

Lauxania.

(Latreille, Hist. Nat. des Crust. et des Ins., XIV, 390, 1804.)

Lauxania elisæ.

Lauxania elisæ Meig., Syst. Beschr., 297, 2.

I have not seen this species before, but there is a specimen in the collection which agrees quite well with the description. Along with this one is another, differing only in the yellow front coxæ and femora. Both specimens were collected during October.

SEPSIDÆ.

Sepsis.

(Fallen, Ortalidæ, 20; 1820.)

Sepsis hirtipes.

Sepsis hirtipes Becker, Ægyptische Dipteren, 142.

Three specimens, agreeing with Becker's description, save that the black of the abdomen is a little more profuse. Collected in May.

Sepsis astutis, n. sp.

Male and female: Head black, shining; besides a pair of ocellar bristles there are two pairs of verticals; antennæ yellowish, apex of third joint obscure, second joint with a bristle above; face, mouth-parts, cheeks and lower part of occiput yellowish; besides the vibrissæ there are two bristles on each side of the mouth. Thorax black; mesonotum subopaque, one humeral, one posthumeral, one supraalar, and two dorsocentral bristles; pleuræ shining, sometimes with a yellowish cast above, with a grayish vitta above coxæ, one mesopleural bristle present; scutellum subopaque black, with an apical pair of bristles; halteres yellow. Front legs yellow, their femora with the usual tubercle beneath, upon which are situated four short black spines, and proximad to which is a single strong spine, the tibiæ with a small swelling on under side near base, bearing a few black bristles; the middle and hind legs shining black, with the coxæ, knees, apices of tibiæ, and tarsi, except their tips, yellowish, middle tibiæ with two short bristles on inner side just beyond middle, hind femora with one bristle on outer side near base of apical third, hind tibiæ also with one bristle on posterior margin near base of apical third. Abdomen shining black, third, fourth and fifth segments each with a pair of submarginal bristles. Wings hyaline, without apical spot, the large vein giving rise to the first, second and third veins enlarged and bordered with brown. Length, 2.7 mm.

Fourteen specimens; February, April, and May.

Sepsis delectabilis, n. sp.

Male: Head shining; front reddish brown, triangle and upper part of occiput black, a shallow median sulcus from tip of triangle to antennæ, with ocellar, two pairs of verticals, and a pair of small bristles behind ocelli present; antennæ reddish yellow, fuscous on upper edge; face, cheeks, mouth-parts, and lower part of occiput yellow, two bristles below vibrissæ. Thorax black; mesonotum largely on the sides, scutellum largely, and pluræ, shining yellow; dorsum of mesonotum subopaque, one humeral, two posthumeral, one supraalar, and two dorsocentrals on each side; scutellum with an apical pair of bristles, and one mesopleural bristle present; a grayish pollinose vitta above middle coxæ; halteres yellow. Abdomen

shining, largely black, first, second, anterior angles of third, and anal segment yellowish; third, fourth and fifth segments each with a pair of submarginal bristles. Legs yellow, base of hind tibiæ, and tip of their tarsi fuscous, front femora with the usual tubercle below, which bears four short spines, just proximad to it is a single, stronger bristle, the tibiæ with a small swelling near base, which is covered with small spines, middle tibiæ with a pair of bristles near the middle and a third bristle near base of outer third, hind femora with two bristles on outer side of apical third, hind tibiæ also with a pair on outer third. Wings hyaline, without apical spot, first large vein at base of wing swollen, bordered with brown.

Female: Agrees with the male, except the mesonotum, regardless of the humeri, and the abdomen, except the anterior angles of second segment, are wholly black; also the legs lack the bristles. Length, 3.8 mm.

Three specimens; April and May.

Sepsis propinquus, n. sp.

Male: Head shining black; front with a pair of ocellar and two pairs of vertical bristles; antennæ obscure reddish yellow, third joint with upper margin brownish black; face reddish yellow, oral margin brownish, median carina low; cheeks with a yellowish cast; proboscis brown, with apex yellowish; occiput subopaque above. Thorax black; mesonotum and scutellum subopaque, one humeral, two posthumeral, one supraalar, one postalar, and a pair of scutellar bristles present; pleuræ shining above and grayish below, with one mesopleural bristle; halteres yellow. Abdomen shining black, third, fourth and fifth segments with the usual pair of bristles. Legs black, front coxæ and trochanters, middle coxæ on apical half, and their trochanters yellowish; front femora with the usual tubercle below which bears three short spines, with one strong one proximad and two less strong ones distad to it, the swelling on base of anterior tibiæ small, all tibiæ with two bristles near the middle. Wings hyaline, the large vein at base of wing swollen, bordered with brown, the apical spot at tip of second vein present. Length, 2 mm.

One specimen; May.

Sepsis petulantis, n. sp.

Male: Head shining black; front with a shallow median sulcus anteriorly, a pair of ocellar, and two pairs of verticals present; antennæ yellow, median carina distinct; cheeks and occiput below, yellow, oral margin fringed with a row of short black hairs; mouth-parts yellow. Thorax black; mesonotum, except a spot on anterior margin between humeri, subopaque gray, one humeral, two posthumeral, one supraalar, one postalar, and one dorsocentral bristle on each side; scutellum subopaque, with an apical pair of bristles; pleuræ shining on upper half, silvery on lower, yellowish just below humeri; halteres yellow. Front coxæ and legs wholly yellow, their femora with the usual tubercle, upon which are situated four small spines, and proximad to which is a much stronger spine; the swelling at base of anterior tibiæ small; four hind legs yellow, coxæ at base, femora just beyond middle, middle tibiæ at base, hind tibiæ and tarsi largely blackish; the femora and tibiæ each with a single bristle underneath. Abdomen shining black, third, fourth and fifth segments with a pair of submarginal bristles. Wings hyaline, with a spot at base of first vein and another at apex of second. Length, 2.2 mm.

One specimen; April.

Sepsis rufa?

Sepsis rufa Macq., Dipt. Exot., Suppl. IV, 296.

A single male specimen, which I doubtfully refer to this species. Besides the two pairs of dorsocentrals there are two posthumeral, two supraalar, and a mesopleural bristle on each side, and the scutellum has an apical pair of bristles. Middle and hind tibiæ with only two bristles near center. Otherwise it agrees with Becker's description of *rufa* in his "Ægyptische Dipteren."

Amydrosoma.

(Becker, Ægyptische Dipteren, 140.)

Amydrosoma discedens.

Amydrosoma discedens Becker, l. c., 141.

One specimen of this elegant sepsid, collected in May.

DIOPSIDÆ.

Diopsis.

(Linne, Diss. Upsal.; 1775.)

Diopsis collaris.

Diopsis collaris Westwood, Trans. Linn. Soc., XVII, 295, 2, tab. IX, fig. 2.

One specimen; October.

Diopsis concolor.

Diopsis concolor Westwood, l. c., 305, 14.

Three specimens; April and May.

Diopsis tenuipes.

Diopsis tenuipes Westwood, l. c., 298, 6, tab. IX, fig. 5.

Two specimens; June.

EPHYDRIDÆ.

Notiphila.

(Fallen, Hydromyz,; 1823.)

Notiphila varitarsis, n. sp.

Male and female: Front dark brown pollinose, with two fronto-orbitals, a small vertical bristle near upper angle of each eye, ocellar bristles strong; occiput, cheeks, and face gray pollinose, cheeks with a strong bristle on lower corner, face with a row of small but distinct bristles on each side; antennæ black, third joint excavated on inner side, arista with ten rays; proboscis brownish black, palpi yellow, clavate, with small black bristles. Mesonotum, upper margin of pleuræ, and scutellum brownish pollinose, remainder of thorax grayish pollinose, two dorsocentral, one humeral, one presutural, two notopleural, two supraalar, one intraalar, and a pair of prescutellar bristles; scutellum with a basal and an apical pair of bristles; halteres yellow. Abdomen brown pollinose, posterior margins of second, third, and fourth segments grayish pollinose, broadly interrupted in the middle, fourth segment with a short median line of the same color, last segment gray on sides, venter largely grayish pollinose. Legs brownish black, knees, middle tibiæ, basal half and extreme tip of hind tibiæ, middle metatarsi, hind metatarsi and the following joint, yellow; middle tibiæ with four bristles externally, hind tibiæ with eight small ones. Wings hyaline, veins black, hind cross-vein straight and about

the length of the small cross-vein from the wing margin. Length, 3 mm.

Numerous specimens; May.

Notiphila confinis, n. sp.

Male and female: Front brownish pollinose, two fronto-orbital bristles, a weaker vertical bristle near the eye, ocellar bristles small; occiput and cheeks grayish pollinose, a strong bristle on latter; face grayish-yellow pollinose, with three strong and several smaller bristles on either side, about as broad as long; antennæ yellow, apical half of third joint black, third joint excavated above and internally, spines and bristles of second joint black, arista with eleven rays; proboscis black, palpi yellow, clavate. Thorax uniformly grayish-brown pollinose, on each side two dorsocentrals, one humeral, one presutural, two notopleural, three supraalar, and a pair of prescutellar bristles present; scutellum with a basal and an apical pair; halteres yellow. Abdomen grayish-brown pollinose, two submedian lines on second and following segments dark brown. Legs black, knees, anterior tibiæ except a narrow subapical band, middle and hind tibiæ and tarsi except last two joints, yellow, middle tibiæ with three bristles externally. Wings hyaline, veins brown, a spine at tip of first vein, posterior cross-vein nearly straight, about two-thirds of its length from the wing border. Length, 3.5 mm.

Ten specimens; May and June.

Paralimna.

(Loew, Monogr. i, 138; 1862.)

Paralimna nigripes, n. sp.

Male and female: Front, occiput, cheeks, clypeus, a spot descending from between bases of antennæ, and sometimes facial orbits brown pollinose; face gray pollinose; front with four fronto-orbitals on each side, the lower one directed forward; face with two bristles and several small hairs on each side; cheeks with one strong bristle; mouth-parts and antennæ black, arista with thirteen rays. Thorax brown pollinose, mesonotum with numerous small, irregularly placed, yellowish brown spots, three dorsocentrals, one humeral, one presutural, two notopleural, one supraalar, one intraalar, and a pair of prescutellar bristles; scutellum with two pairs of bristles; meta-

notum gray pollinose; halteres yellow. Abdomen brownish black, segments with an interrupted, gray posterior border; in some specimens the first one or two bands are entire. Legs black, middle femora with three short bristles near outer end, intermediate tibiæ with three bristles. Wings hyaline, veins brown, costa with a spine at tip of first vein, posterior cross-vein straight. Length, 3–4 mm.

Numerous specimens; May and June.

Paralimna ornatipennis, n. sp.

Male and female: Front in center brown pollinose, frontal orbits of a darker shade; between these two shades of brown on each side of the front is a narrow yellowish pollinose line, which at the upper end of lower third of front turns toward eye and enlarges into a white pollinose spot, below which is a large velvety black spot, and on the inner side of this, *i. e.*, next to antennæ, is a small white pollinose dot; also, below the black spot, next to the face and eyes, is a similar silvery dot; the front on the lower third in the middle is subshining; three pairs of fronto-orbital bristles, the middle pair directed forward, one vertical bristle present; face immediately beneath the antennæ shining, the median ridge between the antennæ crested with silvery-white pollen; this ridge at junction of upper and middle thirds of face divides into two short, nearly transverse ridges, between and below which are two small pits; middle portion of face in this neighborhood light brown pollinose, lower two-thirds and sides gray pollinose, sides on lower half with several short and two long bristles; clypeus, cheeks and occiput gray pollinose, the cheeks with black bristles, one long one; antennæ black, third joint slightly pubescent, arista with eleven rays; proboscis swollen, palpi linear, tips yellowish. Mesonotum and scutellum brown pollinose, humeri and small irregularly placed dots gray pollinose; one humeral, two dorsocentral, one presutural, two notopleural, two supraalar bristles on each side, and a pair of prescutellar bristles present, scutellum with a basal and apical pair; pleuræ gray pollinose, with a few irregularly placed brown dots; halteres yellow. Abdomen brown, subshining, posterior border of segments gray pollinose, venter largely so. Coxæ and legs black, moderately covered with gray pollen, first two joints of tarsi yellowish;

middle tibiæ with three bristles. Wings subhyaline, with brown ornamentations; in the marginal, submarginal and first posterior cells are regular, transverse brown spots, the anal portion of wing and the discal cell along the fifth vein uniformly fuscous; on the under side of fourth vein in the discal cell are two spots, and both cross-veins are broadly bordered with brown; costa with a spine at tip of first vein, the second vein with a stump on under side near tip, also, in some specimens, with one on upper side, but at a greater distance from the tip; hind cross-vein straight, perpendicular, about the length of the small cross-vein from the wing margin. Length, 2.5–3.2 mm.

Five specimens; June.

Ochthera.

(Latreille, Hist Nat. des Crust. et des Ins., XIV; 1804.)

Ochthera subtilis, n. sp.

Male and female: Black, with violet reflections, largely subopaque. Front, except the orbits, and vertex shining violaceous, orbits brownish pollinose, a strong bristle on occiput near upper angle of eye, occiput and face white pollinose, latter with a few short black hairs, clypeus slender, projecting over the mouth in a sharp angle or point, mouth-parts black, proboscis shining, palpi clavate, with brownish pile; antennæ black, reaching a little over half-way to the facial protuberance. Mesonotum subshining, finely scrobiculate, violaceous and metallic, former color forming two submedian rows separated by a narrow median row of bronze, and two short sublateral rows, partially interrupted at the suture, at which point is a small but distinct yellow spot, sides and posterior portion bronze, on sides and just in front of the scutellum is a smooth, whitish pollinose spot, a small yellow spot in front of scutellum; pile sparse and black, one notopleural, two supraalar and one intraalar bristles on each side; scutellum violaceous, finely scrobiculate and black pilose, an apical pair and a subbasal pair of bristles; pleuræ bluish black, shining below and whitish pollinose above; halteres yellow. Abdomen bluish black, shining, sides of first, second, third, fourth and fifth segments with a white pollinose spot, those on the fifth linear and nearly meeting in the middle; pile along the sides white, venter with reddish reflections, white pol-

linose in the center. Coxæ and legs bluish black, mostly white pollinose, front coxæ shining externally, front femora much thickened as usual, shining at apex, and with four strong spines on under side at base, the usual small ones present; front tibiæ yellow at base, the spur shining black, front metatarsi largely yellow, and in the male with a pad of black hairs underneath at tip, the following joints and those of the remaining tarsi narrow yellow at base, four posterior knees with a yellowish tinge, pulvilli white, hind metatarsi moderately swollen, free from pile on under side. Wings hyaline, veins dark brown; last section of fourth vein slightly undulate, posterior cross-vein straight, fifth vein scarcely attaining the margin of the wing. Length, 4–5.25 mm.

Numerous specimens; May and June.

Cænia.

(R. Desvoidy, Myod., 800; 1830.)

Cænia albifacies, n. sp.

Female: Front brown pollinose, lower corners opaque black, with three fronto-orbitals on each side, the lower one small; face white pollinose, which color ascends up between and above the antennæ; near the middle about half as wide as the front, median carina distinct, five bristles on each side; proboscis black, palpi yellow; cheeks and occiput gray pollinose, former with two rather strong bristles; antennæ black, third joint thin, somewhat bent upon itself, arista with seven rays. Mesonotum and scutellum brown pollinose, humeri and pleuræ gray pollinose, one humeral, three dorsocentral, one presutural, two notopleural, three supraalar on each side, with the usual pair of prescutellar bristles; scutellum with two pairs of bristles; halteres yellow. Abdomen subopaque brown, with a slight metallic reflection, with a sprinkling of gray pollen. Coxæ and legs bluish black, with gray pollen, hind femora shining on inner side, extreme base of posterior tibiæ, and hind metatarsi yellow. Wings grayish hyaline, second vein nearly straight, hind cross-vein straight, about its length from the wing margin, fifth vein not reaching the latter. Length, 2 mm.

Three specimens; May.

DROSOPHILIDÆ.

ZAPRIONUS.

(Coquillett, Proc. U. S. National Museum, xxiv, 32.)

Zaprionus vittiger.

Zaprionus vittiger Coq., l. c., xxiv, 32. Cape Colony, Africa.

Several specimens of this beautiful species, collected during February and April. In perfect specimens the facial carina is also white.

DROSOPHILA.

(Fallen, Geomyz.; 1823.)

Drosophila latifrons, n. sp.

Female: Head and members yellow; front broader than one eye, sides slightly converging anteriorly, opaque, in certain lights with a silvery reflection, three fronto-orbital bristles on each side, middle one small, lower one directed forward, other two upward, two vertical bristles near upper angle of each eye, ocellar bristles strong and pointing forward, a pair of smaller bristles behind the ocelli; antennæ two-thirds as long as the face, third joint about one and one-half times as long as broad, faintly tinged with brown on the upper margin; face subshining, median carina broad and prominent inferiorly, oral margin rounded, prominent, separated from carina by a transverse line. Thorax brownish yellow; one humeral, two posthumeral, two presutural, two supraalar, and one postalar bristle present; scutellum with two bristles on each side; two sternopleural bristles present; halteres and legs yellow. Abdomen obscure, dark brownish yellow, subshining. Wings with a brownish tinge, costa reaches tip of fourth vein, third section of costa about a third as long as the second section, and four-fifths as long as the penultimate section of fourth vein. Length, 3.2 mm.

One specimen; April.

Drosophila quadrimaculata, n. sp.

Male: Head and members largely yellow; front not broader than one eye, frontal triangle opaque yellow, nearly reaching the antennæ, narrowly bordered with brown, sides of front grayish white, four fronto-orbital bristles on each side, the lowest one directed forward, ocellar bristles directed forward, a pair each of vertical and postvertical bristles directed backward, a row of minute hairs just laterad to the fronto-orbitals; third joint of antennæ brownish above and at apex; face with an

indistinct median carina; cheeks and occiput slightly grayish pollinose, former very narrow. Thorax yellow, pile black; mesonotum with five longitudinal, brown vittæ, the central one broader than the others and divided longitudinally by a hair-like line, one humeral, two posthumeral, two supraalar, one postalar and four dorsocentral bristles present; scutellum yellow, with two sublateral, brownish lines, with two pairs of strong bristles; pleuræ with three longitudinal brownish lines, one strong and two small sternopleural bristles; halteres yellow. Abdomen yellow, each segment with a broad apical, brown border, which is continued ventrally, anal segment largely shining black. Legs yellow, tibiæ with a small, but distinct, preapical bristle. Wings hyaline, a small dot at tip of each the third and fourth veins, and each of the cross-veins clouded with brown, costa reaches the fourth vein, third section less than half as long as the second, and not as long as the penultimate section of the fourth vein. Length, 3.7 mm.

One specimen; April.

Drosophila facialis, n. sp.

Male: Head and members yellow; front a little broader than one eye, frontal triangle reaching nearly to the antennæ, not very definitely outlined, three fronto-orbital bristles, small ocellar bristles directed forward, a pair of small postocellar bristles discussate and directed backward; third antennal joint rather short, second with several bristly hairs; facial carina prominent, oral margin bordered with black, vibrissæ strong, facial orbits and cheeks showing a grayish coat; bristly hairs of occiput black. Thorax yellow, pile black; two posthumeral, one supraalar, and a pair of prescutellar bristles; scutellum with two pairs of bristles; one strong and one small sternopleural bristle present. Abdomen yellow, pile black, anal segment, and a small spot on lateral margins of the three preceding segments shining black. Legs uniformly yellow. Wings hyaline, costa reaches tip of fourth vein, third section of costa about one-half as long as the second, and about the length of the penultimate section of the fourth vein, this in turn being a little more than one-half the length of the ultimate section, second and third veins slightly divergent. Length, 2.5 mm.

One specimen; April.

Drosophila basilaris, n, sp.

Male and female: Head and members yellow; front broad as one eye, sides parallel, three fronto-orbitals on each side, two verticals near upper angle of each eye, ocellar bristles strong, a pair of small bristles behind triangle; face excavated, median carina not very prominent; antennæ two-thirds as long as the face, third joint one and one-half times as long as broad, brownish on upper margin; occiput blackish centrally. Thorax reddish yellow; two approximated humeral bristles, two posthumerals, one presutural, two supraalar, one postalar, and a pair of prescutellar bristles; scutellum sometimes with the tip brownish and with two pairs of bristles; pleuræ with a longitudinal brownish band, two sternopleural bristles present; halteres and legs yellow. Abdomen subopaque black, in most specimens the first segment on the posterior half and the second segment on the base yellowish white, in other specimens the first segment is wholly yellow. Wings hyaline, costa reaches tip of third vein, its third section about one-half as long as its second, and about one-fifth longer than the penultimate section of the fourth vein. Length, 2.5 mm.

Ten specimens; April.

Drosophila flaviseta, n. sp.

Female: Reddish yellow, macrochætæ yellowish. Front about three-fourths as wide as one eye, sides parallel, three fronto-orbitals on each side, two verticals near upper angle of each eye, ocellar bristles and a pair of smaller ones behind the ocelli present; face excavated and with a low median carina; antennæ but little more than half as long as the face, third joint notched above; cheeks very narrow. Thorax with one humeral, two posthumeral, two presutural, two supraalar, one postalar, and a pair of prescutellar bristles; scutellum blackish at apex, with four bristles; two sternopleural bristles present. Legs uniformly yellow. Abdomen yellow on basal half, and shining brownish black on apical half. Wings with a brownish tinge, most prominent between costa and third vein, a black spot at tip of first vein, costa reaches tip of third vein, its third section about one-half as long as its second, and slightly longer than the penultimate section of the fourth vein. Length, 3 mm.

One specimen; February.

Drosophila apicifera, n. sp.

Female: Head yellow; front broad as one eye, opaque, three fronto-orbitals on each side, a pair of verticals, and a pair of smaller ones behind ocelli, ocellar bristles strong, ocellar dot black; antennæ nearly as long as the face, third joint twice as long as broad, brownish at apex; face somewhat excavated, median carina barely perceptible; mouth-parts yellow; cheeks narrow. Thorax yellow, pile black; one humeral, two posthumeral, two supraalar, one postalar, and a pair of small prescutellar bristles; scutellum with apex white, convex, with two pairs of bristles; halteres yellow; pleuræ with two sternopleural bristles; legs yellow. Abdomen opaque blackish, pile black, segments yellow on sides at base. Wings hyaline, costa terminating at tip of third vein, third section of costa a little more than one-half the length of the second section, and a fourth longer than the penultimate section of the fourth vein. Length, 3.25 mm.

One specimen; April.

Drosophila mansura, n. sp.

Female: Head and members yellow; front about as wide as one eye, three fronto-orbitals on each side, two verticals, a pair of small bristles behind the ocelli, and a pair of rather strong ocellar bristles present; antennæ three-fourths as long as the face, third joint twice as long as broad; face concave, median carina indistinct; palpi long, viewed from above are broad and with parallel sides, from the side are shown to be thin; cheeks narrow; occiput blackish centrally. Thorax brownish yellow; one humeral, two posthumeral, two supraalar, one postalar, and a pair of small prescutellar bristles present; scutellum with two pairs of bristles; halteres yellow; two sternopleural bristles present; legs yellow. Abdomen yellow, posterior borders of second, third, fourth and fifth segments shining black. Wings hyaline, costa reaches tip of third vein, its third section about one-half as long as its second, and little longer than the penultimate section of the fourth vein. Length, 2.5 mm.

One specimen; April.

Drosophila palpalis, n. sp.

Male: Head yellow; front broad as one eye, three pairs of fronto-orbitals, the lower pair directed forward, two pairs of

verticals, ocellar bristles directed forward; third joint of antennæ twice as long as broad; facial carina scarcely perceptible; palpi black, elongate, acute when viewed from the side, broad and rounded from above. Thorax yellow, pile black; mesonotum reddish yellow, with a median gray pollinose vitta, one humeral, two posthumeral, one supraalar, and one postalar bristle; scutellum with two pairs of bristles; pleuræ with a thin coating of gray pollen, two sternopleural macrochætæ present; halteres and legs yellow. Abdomen opaque black, each segment centrally and on posterior border yellowish. Wings hyaline, costa terminates at tip of third vein, its third section a little more than one-half as long as its second, being one and one-fourth times as long as the penultimate sections of the fourth vein. Length, 2 mm.

One specimen; April.

Drosophila proxima, n. sp.

Female: Head and members yellow; front opaque, with three fronto-orbitals on each side, two verticals and a pair of small bristles behind the ocelli, ocellar bristles rather strong; antennæ about two-thirds as long as the face, third joint nearly twice as long as broad; face excavated, median carina perceptible just below the antennæ only; cheeks narrow; occiput black with orbits largely yellow. Thorax reddish yellow; mesonotum with one humeral, two posthumeral, two supraalar, one postalar, and a pair of small prescutellar bristles; scutellum with two pairs of bristles, its apical fourth is white, between this and the remainder of the scutellum is a streak of brown; knobs of halteres brown; two sternopleural bristles present. Legs yellow. Abdomen yellow; second segment with a black spot laterally, brownish in the middle, third and fourth segments with the posterior border shining black, which color extends forward centrally, last segment with the posterior border black. Wings hyaline, costa reaches to tip of third vein, its third section about one-half as long as its second, and a little longer than the penultimate section of the fourth vein. Length, 2.7 mm.

Three specimens; April.

Drosophila mutabilis, n. sp.

Male and female: Yellow, in certain lights the entire body is sericeous; front with parallel sides, sometimes the sides only show silvery, two verticals and three fronto-orbitals on each side; the upper one of the latter is nearly opposite the lower ocellus and directed backward; the other two are very close together, nearly half-way between ocelli and antennæ, directed backward and forward respectively; ocellar bristles small; face scarcely broader than the front, slightly excavated, orbits narrow; antennæ about three-fourths as long as the face, third joint elongate-oval, arista with seven pectinations above and three below; proboscis fleshy, palpi linear, with a few apical bristles; cheeks narrow. Mesonotum with very short black pile, a humeral, two posthumeral, one supraalar, and one postalar bristle; scutellum with the posterior border somewhat oval, and with an apical pair of bristles; pleuræ with a pair of sternopleural bristles; halteres yellow, sometimes with blackish knobs. Abdomen yellow, with considerable variation, in either sex, as to the black markings; some specimens show two large lateral, and one small central spot on fourth segment, and three small ones on fifth segment; others agree with the foregoing with the addition of two sublateral spots on the second segment; others agree with the first set with the addition of a large central spot on the third, and a small central one on the sixth segment; others have the abdomen wholly yellow, and one specimen has the third and fourth segments wholly black. Legs yellow, front femora with from three to four strong bristles on under side. Wings hyaline, costa reaches tip of third vein; the female usually has a small dot at tip of first vein, the male wing as follows: Near the base there is a prominent black spot reaching from costa to fifth vein, the small cross vein is narrowly surrounded by brown; just proximad to the tip of the second vein is a large quadrate spot reaching to the third vein, then it narrows and crosses the first posterior cell to join a large subquadrate spot around the hind cross-vein; the latter spot attains the wing margin just beyond the tip of the fifth vein; the angle between the third vein and the costa is filled out half-way to the tip of the second vein; in the second posterior cell and near tip of fourth vein is a tinge of brown, the apex of the first posterior cell, the base of the

second, the hyaline portion just beyond the tip of the second vein, and hyaline portion from small cross-vein to costa, are in certain lights tinged with gray. Length, 2.5 mm.

Numerous specimens; February and April.

Drosophila pallida.

Drosophila pallida Will., Dipt. St. Vincent, 415. St. Vincent.

Having had access to the types of *pallida*, I have little doubt that my determination is correct. There is a greater variation, however, in the coloration of the abdomen, there being a gradual gradation from specimens with regular bands on posterior borders of segments to those with the abdomen uniformly brown.

Numerous specimens.

Asteia.

(Meigen, Syst. Beschr., V, 88; 1830.)

Asteia longipennis, n. sp.

Male: Wholly yellow, except the abdomen is of a brownish cast. Front broad, bristles very short, except the large ocellar pair; antennæ short, third joint cordate, second joint with a strong bristle on the upper side and smaller ones beneath at apex (arista broken off); face broad, slightly concave in profile, with an indistinct median carina, oral cavity rather large, clypeus visible, proboscis short. Thorax with two blackish bristles on side of mesonotum near base of wing, and one on pleuræ, a little below and behind the humeri; scutellum with an apical pair of rather long bristles and a smaller one on either side. Abdomen of a brownish cast, except the hypopygium, which is yellow. Legs wholly yellow. Wings hyaline, twice as long as the abdomen, slender, anal angle not prominent, tips of first and second veins about the length of the small cross-vein distant from each other, third and fourth veins parallel, costa reaches tip of fourth vein, posterior cross-vein and anal cell wholly wanting. Length, 2.25 mm.; wing, 2.5 mm.

One specimen; May.

OSCINIDÆ.

CRASSISETA.

(Von Roser, Verz. Wurtt. Dipt. Nachtrag; 1840.)

Crassiseta tarda, n. sp.

Front, including the triangle, yellow, ocellar dot blackish, on sides and in front with yellowish, bristle-like hairs, frontal triangle subshining, reach two-thirds way to the antennæ; face yellow, slightly excavated, and with a low median carina, vibrissæ present; cheeks narrow, yellow, in certain lights silvery, occiput yellow, two submedian, brownish marks above neck; antennæ yellow, narrow upper border of the third joint, and arista black, arista not so prominently thickened as in most species of *Crassiseta;* mouth-parts yellow. Thorax reddish yellow, largely shining, short pile yellow, two bristles in front base of wing and two above black, scutellum with four small tubercles, each bearing a bristle, halteres yellow. Abdomen shining brownish black, venter at base in one specimen yellowish. Legs wholly yellow. Wings hyaline, third section of costa a little shorter than the second. Length, 2 mm.

Two specimens; May. This is very close to *C. flavida* Will., from St. Vincent, W. I. The arista is shorter than in *flavida*, and the frontal triangle is much shorter and less shining; otherwise they are very similar.

Crassiseta scapularis, n. sp.

Front opaque brown on upper half, yellow on lower, bristly hairs on sides and in front, triangle shining black, reaching two-thirds way to antennæ, face and cheeks yellow, grayish pollinose, former nearly plane, vibrissæ present, occiput black above, yellow below, antennæ yellow, arista black, mouth-parts yellow. Thorax black, humeri and line in front of base of wing yellowish, mesonotum, scutellum, and pleuræ above thinly grayish pubescent, one humeral, two posthumeral, and two supraalar bristles present, scutellum with a minute apical pair of tubercles, from which arise a pair of bristles, a smaller bristle on each side, halteres yellow. Abdomen subshining black, venter yellowish. Legs light yellow, front tarsi and tip of following pairs black. Wings hyaline, second and third sections of costa of equal length. Length, 1.8 mm.

Two specimens; April.

Crassiseta conjuncta, n. sp.

Front moderately broad, not projecting, opaque yellow, with a mixture of small black and yellowish bristles, frontal triangle narrow, reaching the antennæ, shining yellow, ocellar dot brownish black; face yellow, orbits silvery pollinose, with a pair of blackish vibrissæ; cheeks narrow, yellow, silvery pollinose, with a few small, blackish bristles; occiput yellow, silvery pollinose below, with two divergent brown marks above; antennæ yellow, second joint with several small, yellowish bristles and a larger black one, arista black, two jointed; mouth-parts wholly yellow. Thorax yellow; mesonotum, except humeri and broadly on sides, black, thin coat of microscopic, yellowish hairs, short pile yellow, two posthumeral and two supraalar bristles black; scutellum black on dorsum, microscopic hairs and longer pile yellow, a pair of tubercles on apex and two smaller ones on each side, each bearing a blackish bristle, the apical pair being the largest; halteres yellow; pleuræ largely shining. First and second segments of abdomen ankylosed, the second very large, deeply concave anteriorly for the reception of the convex first segment, these two segments compose most of the abdomen, posterior angles of second very prominent, lateral margins of both and posterior border of second black, following segments short, and decreasing in width very rapidly, shining black; sparse pile yellow. Legs yellow, front tarsi largely, and last two joints of middle and hind tarsi black. Wings hyaline, second section of costa a little shorter than the third. Length, 2.5 mm.

Two specimens; February and April.

Crassiseta atricornis, n. sp.

Front opaque, brownish black, anterior part yellowish, orbits somewhat grayish, small black bristly hairs on sides and anterior part, triangle shining black, reaching two-thirds way to antennæ, ocellar dot grayish pubescent; face excavated, blackish, vibrissæ present; cheeks narrow, oral margins projecting, with a faint yellowish cast; occiput black, grayish pubescent; antennæ wholly black; mouth-parts yellowish. Thorax black, largely shining, with one humeral, two posthumeral, and two supraalar bristles; mesonotum and scutellum with a uniform grayish coat, latter with two long and two short bristles, halteres yellow. Abdomen black, subopaque. Legs wholly black.

Wings hyaline, with a grayish tinge, veins brownish black, second section of costa a little longer than third, small cross-vein nearer to base of third vein than to hind cross-vein. Length, 2 mm.

Crassiseta tuberculata, n. sp.

Front opaque black, yellowish on anterior part, small bristly hairs on sides and in front, triangle shining black, reaches four-fifths way to antennæ, with a pubescent stripe passing diagonally from ocelli to center of each side; cheeks narrow, black, grayish pubescent; occiput black; antennæ yellow, arista black, longer than usual, acuminate; mouth-parts brownish black. Thorax black, two posthumeral and two supraalar bristles, mesonotum, scutellum and upper part of pleuræ uniformly grayish pubescent, scutellum with four prominent tubercles, each bearing a rather strong bristle, halteres yellow. First two segments of abdomen yellowish above and below, with their lateral margins black, following segments shining black. Legs yellow, middle and hind femora toward apex, and tip of tarsi brownish. Wings hyaline, second section of costa slightly longer than the third. Length, 2.2 mm.

One specimen; October.

Crassiseta vulgaris, n. sp.

Front opaque yellow below, brownish above, orbits somewhat grayish, a row of short black bristles on each side reaching almost to antennæ, other small black hairs on anterior part, triangle shining black, reaching two-thirds to antennæ, ocellar dot grayish pubescent; face excavated, blackish, a pair of vibrissæ present; cheeks narrow, yellow, oral margin slightly projecting; occiput black above, yellow below; antennæ yellow, upper side of third joint and arista black; proboscis blackish, palpi yellow. Thorax black, largely shining, mesonotum and scutellum with a uniform thin coat of grayish pubescence; two posthumeral and two supraalar bristles present; scutellum non-tuberculate, with one pair of large and a small pair of bristles; halteres yellowish white. Abdomen black, subopaque, venter sometimes yellowish at base. Legs largely yellowish, the femora and hind tibiæ sometimes brownish, tips of tarsi blackish. Wings hyaline, veins dark brown, second section of costa a little longer than the third, small cross-vein nearer to

the furcation of the second and third veins than to the hind cross-vein. Length, 1.7 mm.

Numerous specimens; October.

Oscinis.

(Latreille, Nouv. Dict. d' Hist. Nat., XXIV, 196; 1804.)

Oscinis polita, n. sp.

Front opaque black, narrow anterior border with a yellowish cast, bristly hairs on sides and in front short, triangle shining black, large, almost reaching the antennæ, and nearly contiguous with eyes above; face, cheeks and occiput black, with grayish reflections, vibrissæ present; antennæ and mouth-parts black. Thorax black, mesonotum and scutellum subopaque, grayish pubescent, former with two posthumeral and two supraalar bristles, latter somewhat shortened and convex, with four bristles; halteres yellow. Abdomen subopaque black. Legs black, knees, tibiæ, and tarsi, except their tips, yellow. Wings hyaline, with a slight grayish tinge, second and third sections of costa of about equal length. Length, 1.5 mm.

One specimen; May.

Oscinis basilaris, n. sp.

Front opaque brown above and yellow below, with black bristly hairs on sides and in front, triangle shining black, reaching two-thirds to antennæ; face light brown, with a low median carina, vibrissæ present; cheeks narrow, yellowish, in certain lights silvery; occiput black, covered with grayish pollen; antennæ wholly black; proboscis brownish black, palpi yellow, clypeus black. Thorax black, largely shining, humeri, pleuræ partially, and sides of scutellum yellowish, mesonotum and scutellum with a thin coat of grayish pubescence, latter with an apical pair of bristles, a shorter, hair-like bristle on each side; halteres yellow. Abdomen brownish black, shining, two basal segments largely yellowish. Legs yellow, all femora and tibiæ with a brownish cast near the middle, last two joints of tarsi fuscous. Wings hyaline, second and third sections of costa of about equal length. Length, 1.9 mm.

Two specimens; October.

Anatrichus.

(Loew, Bidrag til kanned. om Afr. Diptera, 97, 7.)

Anatrichus erinaceus.

Anatrichus erinaceus Loew, Bidr. t. känned. om Afr. Dipt., 97, 7, 13.

Three specimens of this peculiar insect; May.

Meromyza.

(Meigen, Syst. Beschr., V, 163.)

Meromyza opaca, n. sp.

Front fulvous, broader than one of the eyes, minute black hairs on anterior part, with a silvery line along the eye, triangle opaque, grayish pollinose, reaching nearly to the anterior margin of front; antennæ brownish yellow, third joint more or less rotundate, brown on upper side at tip, arista basal, brownish black; face with a small median carina, on each side of which the ground color is blackish, remaining parts yellow, and all covered with whitish pollen; mouth-parts yellow; cheeks and occiput yellowish, latter with a black mark on each side of center above, both with silvery or gray pollen. Thorax opaque grayish brown; mesonotum with hair-like, light grayish-yellow lines, diverging posteriorly, the middle one attaining the tip and the other two the sides of the scutellum, mesonotum covered with microscopical black hairs, the sides and the pleuræ grayish pollinose; halteres brownish, knobs white; scutellum with an apical pair of small bristles. Abdomen yellowish brown, dorsum of segments each with a large dark brown triangle at base, the apex of which attains the posterior margin. Coxæ brownish black, four front femora generally yellowish, sometimes with a brownish ring near center, hind femora black, apex yellow, shining on inner side; tibiæ and tarsi, except last joint of latter, yellow. Wings hyaline, veins fuscous, third and fourth veins divergent. Length, 4 mm.

Numerous specimens; October.

Pachylophus.

(Loew, Berl. Ent. Zeitschr., II, 121.)

Pachylophus splendida, n. sp.

Front long, projecting in front of the eyes a third of their greatest diameter, broader than one of the eyes, excavated, vertex prominent, black, a silvery line on each side next to the eye; anterior broader, narrowly yellow, frontal triangle shin-

ing, reaching nearly to the antennæ; antennæ black, lower half of third joint yellow, second joint somewhat cup-shaped on distal end for the reception of the third joint, arista black; face gently receding, forming with the front an angle of about forty-five degrees, black, covered with gray pollen, the median carina reaching from front to oral margin; mouth-parts small, black; cheeks and occiput black, covered with gray pollen; eyes elongate-oval. Thorax black, opaque; mesonotum with a pair of subdorsal, narrow, gray pollinose lines, which are slightly divergent posteriorly, on the sides, and the pleuræ gray pollinose; halteres with brown base and whitish knobs. Abdomen wholly black, subopaque. Legs black, base and tip of middle tibiæ, middle and hind tarsi, except last joint, yellowish. Wings hyaline, with a very faint tinge near apex, second vein joins costa nearly opposite hind cross-vein, third and fourth veins straight, gently divergent; wings rather narrow. Length, 4 mm.

One specimen.

Pachylophus proxima, n. sp.

Front broad and short, not projecting in front of the eyes, slightly excavated, with a few minute hairs on anterior part, brownish yellow on anterior margin and lower half of sides, with a narrow silvery line along orbits, frontal triangle long and broad, covering most of the front, shining, bluish black; face nearly perpendicular, the oral margin slightly projecting, black, moderately shining; cheeks blackish, with a yellowish cast just below the eyes, shining, about one-fifth as high as the eyes; occiput black, whitish pollinose along the eyes; antennæ black, lower anterior angle of second joint, and the lower side of the third joint yellow, end of second joint somewhat cup-shaped, arista black; compact, composed of three sections; mouth-parts black. Thorax black, mesonotum subopaque, with two subdorsal gray pollinose lines diverging posteriorly, which are finally connected by the posterior border being rather broadly pollinose, sides, from humeri to scutellum, gray pollinose, which join the subdorsal lines anteriorly; scutellum largely covered with pollen; pleuræ shining; halteres brownish at base, knobs white. Abdomen black, subopaque. Legs

black, the four anterior knees, tips of all tibiæ, and tarsi yellow. Wings as in the preceding species. Length, 3.25 mm.

Numerous specimens; October.

Pachylophus varipes, n. sp.

Front broader than one of the eyes, short, scarcely projecting in front of the eyes, yellowish on the anterior margin and lower half on the sides, the silvery hair-like line along the orbits scarcely visible, absent in some specimens, a few minute black hairs on sides and in front, triangle long and slender, plane, shining black; face straight, forming with the front an angle of about ninety degrees, oral margin not projecting, brownish black; cheeks narrow, with a yellowish cast, covered with grayish pollen; occiput black, grayish pollinose; antennæ black, third joint yellow on the lower side, arista two-jointed; mouth-parts yellow. Thorax black, mesonotum and scutellum uniformly gray pollinose, pleuræ partly shining; halteres yellow. Abdomen black, subopaque, with a thin coat of dust. Legs largely yellow, in some specimens the front and hind femora are largely black, last joint of all tarsi black, hind femora only moderately incrassate. Wings grayish hyaline, third and fourth veins straight, gently divergent, second section of costa shorter than the third. Length, 2.4 mm.

Numerous specimens; May.

Pachylophus fossulata, n. sp.

Front a little broader than one eye, not projecting, yellowish on anterior margin and on lower half of sides, triangle shining black, reaching nearly to the antennæ, contiguous with the eyes above, and containing two, sometimes one large one, small fossæ, one at apex and one near middle; face nearly straight, with a brownish-yellow cast, sides grayish pollinose; cheeks small, yellowish, gray pollinose; occiput black, gray pollinose; mouth-parts yellow; antennæ largely yellow, upper margin and apex of third joint, and arista, black, latter composed of two joints. Thorax black; mesonotum and scutellum finely scrobiculate; pleuræ smooth, shining; halteres brownish, knobs sometimes yellowish on inner side. Abdomen black, dorsum of first two segments, sometimes the third also, more or less of a yellowish cast. Coxæ and legs yellow, front tibiæ,

except extreme base, front tarsi and last two joints of hind tarsi black. Wings grayish hyaline, veins brownish, second section of costa a little shorter than the third, third and fourth veins slightly divergent, cross-veins a little more approximated than in the other species. Length, 3 mm.

Numerous specimens; May.

Pachylophus frontalis.

Pachylophus frontalis Loew, Berl. Ent. z, 121.

Numerous specimens; October.

Haplegis.

(Loew, Schles. Zeitschr. f. Ent. (22); 1866.

Haplegis scutellaris, n. sp.

Front broader than one eye, moderately projecting anteriorly, yellow, frontal triangle shining black, large, contiguous with the eyes above, suddenly narrowing to an acute angle anteriorly, which reaches nearly to the antennæ; face moderately receding, light yellowish, whitish pollinose; cheeks narrow, yellowish, white pollinose; occiput black, yellow on lower angles; antennæ largely yellow, upper anterior angle of third joint black, third joint quadrangular, nearly twice as long as broad, arista basal, bare, brownish black; proboscis brownish black, palpi yellow. Thorax shining black, a spot behind humeri, one above front coxæ, a narrow line above middle coxae, and scutellum yellow; one humeral and two posthumeral bristles present; knobs of halteres yellow. Abdomen shining black. Legs black, coxæ, base and tip of all femora and tibiæ, and tarsi wholly, yellow. Wings hyaline, veins brown, second section of costa nearly twice as long as the third, small cross-vein nearly under the tip of first longitudinal vein, third and fourth veins straight, nearly parallel. Length, 2 mm.

One specimen; October.

Chlorops.

(Meigen, Illig. Mag., II, 278.)

Chlorops trimaculata, n. sp.

Front nearly twice as broad as one eye, moderately projecting before the eyes, yellow, with a few small black hairs, frontal triangle reaching nearly to the antennæ, yellow, with a shining black spot on each angle, the two upper ones triangu-

lar, the lower one larger and diamond-shaped; face, cheeks and occiput light yellow, latter reddish yellow above, with a brownish triangular marking on each side above the neck; mouthparts and clypeus yellow; antennæ about as long as the face, reddish yellow, apex of third joint black, arista rather short and thick. Thorax yellow, mesonotum with three broad, reddish-yellow vittæ, the two lateral ones abbreviated anteriorly, the central one posteriorly, a few black, bristly hairs in front of and above base of wing; scutellum reddish yellow on disk, besides an apical pair there are two small bristles on each side; pleuræ with a small shining black spot above front coxæ; halteres yellow. Abdomen reddish yellow throughout. Legs yellow, last two joints of all tarsi black. Wings hyaline, veins brown, second and third sections of costa somewhat swollen, former three-fourths as long as the latter. Length, 2.5 mm.

One specimen; October.

AGROMYZIDÆ.

Rhodesiella, gen. nov.

Head hemispherical; eyes oval, bare, occupying whole of height of head; cheeks very narrow; front a little broader than one eye, with three rows of short bristles on each side; face nearly perpendicular, slightly concave, with the oral margin moderately projecting, vibrissæ present; antennæ short, third joint orbicular, arista distinctly pubescent; proboscis short and fleshy, clypeus projecting, palpi clavate. Mesonotum minutely punctulate, with macrochætæ only on the sides; scutellum large, swollen, subtriangular, more distinctly punctate, spinous tubercles on sides near apex, with an apical pair of divergent bristles. Abdomen short and broad, composed of five segments. Costa reaches tip of fourth vein; auxiliary vein rudimentary, joining the first vein near its center; first vein ending a little before the middle of the wing, second, third and fourth veins curving forward, the latter ending before apex of wing, second and fourth sections of costa of about equal length, third nearly as long as both together; hind cross-vein beyond middle of wing; discal and second basal cells united, anal cell rudimentary. Femora with an external row of short bristles. Type, the following species.

Rhodesia tarsalis, n. sp.

Female: Shining black, with short yellowish pile. Front smooth, shining purple, ocellar bristles present, and a pair of rather strong verticals differentiated from the fronto-orbitals; antennæ black, under side of third joint reddish brown; face shining black. Thorax with one humeral, two posthumeral, one supraalar, and one postalar bristle on mesonotum; pleuræ smooth, halteres black. Abdomen shining black, compressed, with yellowish pile. Legs shining black, coxæ and anterior knees with a reddish cast, all tarsi light yellow. Wings hyaline, the ultimate and penultimate sections of the fourth vein forming quite an angle at the hind cross-vein, base of ultimate section slightly undulate. Length, 2.75 mm.

One specimen; February.

BORBORIDÆ.

Borborus.

(Meigen, Illig. Mag., II, 276.)

Borborus marginatis, n. sp.

Female: Front twice as wide as one eye, grayish pollinose on sides, triangle reaching anterior margin, and yellowish pollinose, between the triangle and the grayish the front is opaque brownish black, upon which is a row, on either side, of short bristly hairs, also a row of similar hairs of gray orbits; two backwardly curved fronto-orbitals and one vertical bristle on each side, ocellar bristles present. Face excavated, with a low median carina, subshining, grayish pollinose, yellowish in ground color along oral margin, vibrissæ strong. Cheeks and occiput black, grayish pollinose, with short black hairs. Antennæ black, third joint orbicular, reddish yellow underneath, arista microscopically pubescent. Mouth-parts subshining black, clypeus yellow anteriorly. Thorax black, yellowish pollinose, three subpollinose vittæ on mesonotum; one humeral, two posthumeral, one supraalar, one postalar, and a pair of prescutellar present; besides these there are six rows of short bristles on the mesonotum; scutellum with four bristles. Sternopleuræ subshining; halteres yellow. Abdomen black, grayish-yellow pollinose; second segment somewhat elongate, remaining segments of equal length, except the fifth, which is a little shorter than the fourth. Legs black, grayish pollinose; front coxæ

shining; front and middle knees and middle tarsi, except last two joints, yellowish; all femora and front and middle tibiæ ciliated with bristly hairs, the hind tibiæ with the usual apical spine and two subapical bristles; hind metatarsi swollen as usual, and scarcely longer than following joint. Wings hyaline, tinged with a faint yellowish brown; costa distinctly ciliated as far as the tip of the first vein; small cross-vein a little beyond the tip of the first vein, last section of fourth vein a fifth longer than the penultimate. Length, 2.7 mm.

Borborus gravis, n. sp.

Male and female: Front broader than one eye, triangle reaching anterior margin, and with the frontal orbits grayish pollinose, remainder of front opaque black, with a shining line on the anterior part, just laterad of triangle, and bearing a row of short bristly hairs, also a row of gray orbits; two fronto-orbitals, two verticals, and a pair of ocellar bristles present. Face, cheeks and occiput black, subshining, grayish pollinose; former concave in profile, with a low median carina, vibrissæ strong. Mouth-parts black. Antennæ black, third joint subglobular, sometimes with a reddish tinge on inner side at base, arista microscopically pubescent. Thorax from posterior view subshining, from front view opaque, brownish pollinose, with two submedian grayish lines; one humeral, two posthumeral, one presutural, one supraalar and three dorso-central bristles on each side, the small bristly hairs arranged in six rows; scutellum with four bristles; halteres yellow. Abdomen subopaque black, grayish pollinose, second segment elongate. Legs black, anterior and middle knees and middle tarsi, except the last two joints, yellowish; femora and tibiæ armed with bristles, middle tibiæ with one near middle and three near apex, hind tibiæ with two strong bristles apically beside the curved apical spine. Wings hyaline, costa slightly thickened just beyond tip of first vein, and distinctly ciliated in front of it, small cross-vein a little distad to tip of first vein, and last section of fourth vein but little longer than preceding section. Length, 2.1 mm.

Four specimens; February.

LIMOSINA.

(Macquart, Suites a Buffon, II, 571, 8; 1835.)

Limosina marginata, n. sp.

Male and female: Front reddish yellow, ocellar dot and vertex black; orbits of a grayish luster; three fronto-orbital bristles, all curving backward, the upper one large; a vertical and two postverticals on each side; besides the strong ocellar bristles there are several smaller ones behind ocelli; on anterior part of front there are two submedian rows of bristles, each containing three, the lowest one of which is strong; among the fronto-orbitals are a few bristly hairs; third antennal joint reddish yellow, arista pubescent. Face yellowish, concave in profile, carina prominent, vibrissæ strong. Cheeks yellowish, with yellow pollen; half as high as eye and bearing three strong and several weak bristles. Mouth-parts yellow, proboscis fleshy, palpi subclavate, bearing several bristles. Occiput black, yellowish on lower part. Thorax dark brown opaque; mesonotum with lateral margins, except just behind the humeri, yellowish, and four longitudinal brownish-yellow pollinose vittæ; one humeral, two posthumeral, two presutural, two supraalar, one postalar, a small prescutellar, and five dorsocentrals on each side; scutellum subshining black centrally, margins broadly yellow; three strong, three weak, and three bristly hairs on each side; pleuræ dark brown, yellowish along various sutures, with two sternopleural bristles; halteres yellow. Abdomen subopaque black, with rather strong bristly hairs on lateral margins. Legs brownish black, coxæ, knees, tibiæ and tarsi yellowish; front femora with three bristles on under side near tip, middle with a strong bristle near base, middle tibiæ with from eight to ten very strong bristles or spines on outer side, each joint of middle tarsi with one or two spinous bristles on apex; hind tibiæ with five bristles along posterior margin. Wings with a fuscous tinge; first section of costa with six short bristles, second section twice as long as the third; small cross-vein nearly opposite the midpoint of the second section of the costa. Length, 3 mm.

Six specimens; April and May.

Limosina venalicia.

Borborus venalicius O. S., Cat. N. Am. Diptera, 263.

One soiled specimen, which I believe belongs here. The markings of the head and the mesonotum are obliterated, and on this account its identity is uncertain. The general color, the markings on the legs, and the wings, are comparable very well to the description of Osten Sacken's species, and its identity is very probable.

MUSCIDÆ.

Paracompsomyia.

(Hough, Proc. Acad. Nat. Sci. Phil., 1898, p. 184.)

The males in this genus have an area of enlarged facets, eyes subcontiguous. The costa is black only in *nigripennis*, the type of the genus. In the remaining species, described herein, the base of the wing only is black.

Paracompsomyia nigripennis Hough, l. c., p. 184.

In the collection before me are four specimens agreeing in all particulars with Hough's description. The male, of which Hough had no representative, is a fraction smaller than the female; the large faceted area is sharply marked off, occupying the upper two-thirds of the eye, and is ferruginous in color; the remainder of the eye is dark brown.

January.

Paracompsomyia houghi, n. sp.

Male and female: Smaller than *nigripennis*, 8 to 10 mm., wing, 7.5 mm. Largely metallic green, with bluish and violet reflections on thorax and base of abdomen. Head black, subshining below lower angle of eye, grayish pollinose except on frontal vitta and upper part of front, and white pilose. Area of large facets not sharply marked off. Antennæ and legs black, latter sometimes brownish in the female. Wings hyaline, base, as far as tip of small basal cells, blackened. Thorax with a sheen of white dust, most prominent in front of the suture, pile black. On front part of thorax are two opaque, black, angular lines, meeting centrally on anterior margin, so as to form a $\wedge$-shaped figure; just in front of the suture each turns outward, broadens, and becomes club-shaped. The space between these lines shows, in certain lights, metallic green.

Just behind the suture is an opaque black line, not reaching the lateral margin, but sending back a short projection at each end. Abdominal segments each with an opaque band on apical margin, those on basal segments being broadest; pile whitish. Pile of base of femora whitish, on remainder of legs, black. Base of scutellum subopaque black. Chætotaxy same as in *nigripennis*, except there are only three marginal bristles on scutellum.

Fourteen males and six females; September. Dedicated to Doctor Hough, the author of the genus.

Paracompsomyia splindida, n. sp.

Male and female: Smaller than *houghi*, 7 to 9 mm., wing, 7 mm., green, with violet reflections. Head shining black, sides of face and lower part of occiput grayish dusted; pile black; antennæ very dark brown; area of large facets occupying upper half of eye, and light brown in color. Thorax blackish green with violet reflections, in center of anterior margin is a triangular metallic green spot, which in certain lights shows a coat of white pollen. Pile of thorax and abdomen very short and black. Abdomen green, usually with violet reflections on base and sides, venter light pollinose. Legs blackish green or violet. Wings hyaline, extreme base lightly infuscated. Chætotaxy same as in *nigri pennis*, exceptonly two dorsocentrals, scutellum without discal bristles, and with only two marginals. Halteres light brown.

Numerous specimens; January.

Paracompsomyia verticalis, n. sp.

Female: Metallic green, with the transverse suture, posterior angles of mesonotum, base of scutellum, and posterior border of each abdominal segment showing a very thin coat of light pollen. Vertex and occiput black, remainder of head ferruginous, with whitish pile and silvery pollen. Antennæ and proboscis blackish, palpi yellowish. Legs brownish black. Wings hyaline, except on base, which is clouded. Chætotaxy same as in *houghi*, from which species it differs principally in the color of the head. Length, 7.5 mm.; wing, 6 mm.

One specimen; January.

ANTHOMYIDÆ.

SPILOGASTER.

(Macquart, Hist. Nat. Dipt., II, 293; 1835.)

Spilogaster osten-sackenii, Jaen. Neue Exot. Dipt., 371, 77.

Numerous specimens of each sex, which I identify as Jaennick's species. The males have the markings of thorax and abdomen opaque black, instead of brownish black as in the female. Among the lot are several males of smaller size, 4.5 mm., and with wings more clouded; otherwise, they are the same throughout.

April, May, and June.

Spilogaster tripunctata?

Anthomyia tripunctata Wied., Auss. Zweifl. Ins., II, 422, 2.

A female specimen agrees with Wiedemann's *A. tripunctata* in all particulars except the legs, which are of a uniform dull yellowish cast, and tarsi black. Whether I am correct in my identification or not, I cannot say, but my specimen agrees so closely to Wiedemann's description that I do not feel justified in describing it as new.

October.

Spilogaster quadriseta, n. sp.

Male and female: Gray; thorax with two indistinct brown vittæ; second and third segments of abdomen each with two brown spots, and the fourth segment with a median, oval spot; legs black. Head silvery pollinose; eyes of male contiguous, frontal vitta velvety black, with four bristles on each side; frontal vitta of female broad, emarginated above by the gray frontal triangle, with five frontal, one strong inner vertical and one outer vertical bristle present, the lowest frontal is stronger than the others and more porrect; ocellar bristles strong and divergent; antennæ black, nearly as long as the face, arista long plumose; sides of face and upper part of cheeks bare; mouth-parts black. Thorax with four rows of dorsocentrals, each with two presutural and three postsutural bristles; two humerals, two notopleurals, two supraalars, of which the hinder one is small, and one postalar bristle present; prescutellar bristles very small; seven mesopleural, of which one is situated in upper anterior angle of the sclerite, and four sterno-

pleural bristles present, two of the latter are situated low down; scutellum with a pair of strong, decussating apicals, a pair of weak subapicals, and a pair of strong basal bristles. Second, third and fourth abdominal segments with marginals, and third and fourth with discal bristles. Wings hyaline, veins light brown, costal spine present. Halteres yellow. Length, 5 mm.

One male and nine females; May, June, and October.

Spilogaster latifrons, n. sp.

Male: Gray; thorax with two brown lines anteriorly; abdomen with first segment largely, and posterior border of remaining segments, yellow; second and third segments brown, bimaculate. Head silvery pollinose; front with curved sides, slightly broader, at a point half-way between antennæ and ocelli, than ocellar tubercle, with three decussating frontal bristles above the antennæ, lowest pair strongest and porrect, others directed slightly backward, ocellar bristles large, pointing forward; antennæ black, nearly as long as the face, arista long, sparsely plumose; vibrissæ large; sides of face and upper part of cheeks bare; palpi black, proboscis short, yellowish at tip. Thorax with four rows of dorsocentrals, each containing two presutural bristles, the two middle rows three, and the two outer rows two postsutural bristles; two humerals, two notopleurals, two supraalars, the hind one very small, and one postalar bristle present; the pair of prescutellar bristles are very small and close together; of the mesopleural bristles two in upper part of row and one in lower part are strong, others weak; three sternopleurals, the middle one situated low down; scutellum with an apical pair of strong, decussating bristles, a pair of weak subapicals, and a pair of strong basals. Abdominal segments with a row of marginals, those of the third and fourth segments strongest, the third and fourth also with a row of discals; hypopygium small, largely concealed. Legs black, coxæ, tips of femora, and tibiæ yellow, femora gray dusted. Wings hyaline, veins yellowish, a distinct costal spine present. Halteres yellow. Length, 4.5 mm.

Female: Same as male, except there are five frontal bristles, the lowest pair being largest and more porrect, a large inner and smaller outer vertical bristle present; the gray frontal triangle reaching nearly to the antennæ; the coxæ and the front

femora largely, and upper surface of tip of middle and hind femora black. Length, 5.5 mm.

Four specimens; April and May. The specific name is given in reference to the rather broad front of the male.

Caricea.

(Desvoidy, Myod., p. 530; 1830.)

Caricea sexnotata, n. sp.

Female: Head black, occiput gray pollinose, front, face, and cheeks uniformly yellowish-gray pollinose, four frontal bristles present, inner verticals large, outer small, antennæ yellow, arista short plumose, proboscis black, palpi yellow. Thorax black, gray pollinose, with two rows of dorsocentrals, each with one in front of and three behind the suture, two humeral, two posthumeral, one just internal to the posthumerals, one supraalar and one postalar bristle present, prescutellars absent; three mesopleural and three sternopleural bristles, one of the latter low down; scutellum with an apical and a basal pair of bristles; halteres yellow. Legs uniformly yellow. Front two segments of abdomen yellow, second with two brown spots, third and fourth segments black, covered with gray pollen, and each with two velvety black spots. Wings hyaline, veins semi-translucent. Length, 3 mm.

Two specimens; May.

Caricea multimaculata, n. sp.

Male and female: Black, gray pollinose. Antennæ rather long for this genus, arista short plumose. Four frontals, inner vertical present, outer vertical absent, ocellar bristles small; proboscis sometimes with a yellowish cast, palpi linear. Two rows of dorsocentrals, each with one in front of and three behind the suture, two humeral, two posthumeral, one above posthumerals, one supraalar, and one postalar bristle, prescutellar bristles absent; four mesopleurals and three sternopleurals, one of the latter situated low down; scutellum with an apical and a basal pair of bristles; halteres yellow. Each abdominal segment, besides having a linear, central spot, with a larger, brown spot on each side; third and fourth segments with discal macrochætæ. Coxæ and femora black, tibiæ yellow, tarsi fuscous. Wings hyaline. Length, 3.3 mm.

Ten specimens; May and June.

Caricea flavipes, n. sp.

Female: Very close to *multimaculata*, agreeing in size, color, and chætotaxy; the markings of the abdomen are the same, but not so distinct. The legs are wholly yellow.

Five specimens; April.

Chortophila.

(Macquart, Hist. Nat. Dipt., II, 323; 1825.)

Chortophila linearis, n. sp.

Male and female: Black, uniformly covered with yellowish-gray pollen. Frontal vitta in male velvety black, except just above antennæ where it is reddish; in the female it is largely reddish yellow, and bears a pair of bristles just below the vertical triangle; three frontals in male, five in female, inner and outer verticals small in male, large in female. Antennæ black, first two joints of a reddish cast, arista short plumose. Face of male more silvery pollinose than in the female. Oral margin, palpi and apex of proboscis with a brownish cast, palpi linear. Mesonotum with four rows of dorsocentrals, middle rows with two bristles in front of and three behind the suture, outer rows with two in front of and two behind the suture; two humerals, two posthumerals, one supraalar and one postalar bristle present; prescutellar bristles small; four mesopleurals and two sternopleurals, the male with three sternopleurals; apicals and basals of scutellum strong, preapical pair small. Abdomen with marginal macrochætæ, those of the male stronger than those of the female, second, third and fourth segments of the male with a median linear spot. Wings hyaline, with a faint fuscous tinge; costa with a strong spine at tip of auxiliary vein. Halteres yellow. Legs black, knees in the male and the tibiæ in the female with a yellowish cast. Length, 4.3 mm.

Numerous specimens; May and June.

Hydrophoria.

(Desvoidy, Myod., 503; 1830.)

Hydrophoria tarsata, n. sp.

Male: Head and members yellow, occiput black and covered with a thin coat of gray pollen; two pair of frontal bristles just above the antennæ. Thorax subshining black, with a thin coat of gray pollen; humeri faint yellowish in ground color, not

perceptible in the perfect specimens; two rows of dorsocentrals, each with two bristles in front of and three behind the suture, two humerals, two posthumerals, one supraalar, and one postalar, the prescutellar bristles mark the termination of two rows of small bristles on dorsum of mesonotum; four mesopleural and four sternopleural bristles present, two of the latter situated low down; scutellum with an apical, a preapical, and a basal pair of bristles; halteres yellow. Abdomen yellow, a triangular spot on posterior margin of second, and the third and fourth segments largely, black, in certain lights all segments silvery pollinose on posterior border. Legs yellow, tarsi black, pulvilli yellow. Wings yellowish. Length, 5 mm.

Two specimens; April.

Cœnosia.

(Meigen, Syst. Beschr., V, 210; 1826.)

Cœnosia valida, n. sp.

Male and female: Head yellow, occiput black, with gray pollen, frontal vitta velvety brown, yellow on lower third; first two antennal joints yellow, third black, reaching almost to the oral margin, arista black, bare; proboscis short, black, palpi yellow; five frontal bristles, an inner and an outer vertical bristle present, ocellar bristles directed forward. Thorax black, with gray pollen, humeri and lower part of pleuræ yellowish; bristles on mesonotum short and not easily differentiated from the bristly hairs; I can definitely see three humeral, two posthumeral, one supraalar, one postalar, one dorsocentral on hind border, and a pair of small prescutellar bristles; there are three mesopleural and three sternopleurals, one of the latter situated low down; besides an apical and a basal pair, there is a pair of small preapical bristles on the scutellum. Abdomen yellow, in the male the third and fourth segments, and in the female the fourth, bimaculate. Legs yellow, in the male the apical fourth, and in the female the apical two-thirds, of the front femora black, the front tibiæ, except the basal fourth, and all tarsi blackish. Wings hyaline, veins semitranslucent. Halteres yellow. Length: Male, 3 mm.; female, 4.5 mm.

Ten specimens; February and April.

Cœnosia lineata, n. sp.

Female: Head black, gray pollinose, sides of front shining, frontal vitta opaque black, five frontal bristles, and the usual inner and outer verticals, ocellar bristles small; antennæ black, reaching nearly to the oral margin, arista bare; face and cheeks yellow; proboscis and palpi black, the former longer than the height of head. Thorax black, gray pollinose, with a distinct brownish median vitta; chætotaxy same as in *valida*. Abdomen yellow. Front legs black, front coxæ, base of front femora, and middle and hind legs wholly, yellow. Wings hyaline, veins semitranslucent. Halteres yellow. Length, 4 mm.

Two specimens; date not recorded.

PLATE I.

Some mouth-parts of *Lachnus longistigma*.

FIGURE 1.

Cephalic view of the head and ventral view of the labium.

A.—First two segments of the antennæ.
B.—Frontal ocellus, situated in the epicranium.
C.—Compound eye.
O.—Ocular tubercle.
D.—Frons.
E.—Clypeus.
F.—Basal sclerite of mandibular setæ.
G.—Labrum.
H.—Labium.
I.—Mandibular setæ separated.
J.—Maxillary setæ not separated.

Setæ are all slightly displaced for the sake of illustration. 1, 2 and 3 are the first, second and third joints of the labium, respectively.

FIGURE 2.

Ventral view of the labrum.

A.—Epipharynx.
B.—Chitinized rod formed by the approximation of the lateral folds or margins of the labrum.

FIGURE 3.

Dorsal view of a mandibular seta.

A.—Muscular attachment of setæ.
B.—The basal sclerite.
C.—Greatly enlarged distal point of the same seta or stylet.
D.—Lumen.

FIGURE 4.

Ventral view of the labium with the setæ removed and the canal open.

A.—Antelabial sclerite.
B.—Median chitinized floor which supports the maxillary setæ.
C.—Chitinized lines which support the mandibular setæ.
D.—The chitinized floors are in the canal which becomes eliminated at this place on account of the profunal bend in the labium.

FIGURE 5.

Cross-section of the first joint of the labium with the setæ removed, canal closed.

A.—Chitinized floor.
B.—Chitinized wall.
C.—The labial canal in which the setæ may be held.
D, E.—Paired tongues and grooves, respectively, which firmly lock the two lateral edges of the canal together when the insect is drilling into its host-plant. This connection is more perfect nearer the distal end of the canal.
F.—Outer margin of the labium.
G.—Some of the musculature.

FIGURE 6.

Cross-section of the labial canal with the setæ in place.

A.—Chitinized floor.
B.—Chitinized wall.
C.—Labial canal.
D.—Mandibular stylet.
E.—Lumen in mandibular stylet.
F.—Maxillary stylet.
G.—Lumen in the maxillary stylet.
H.—Tube through which the food is taken.

PLATE II.

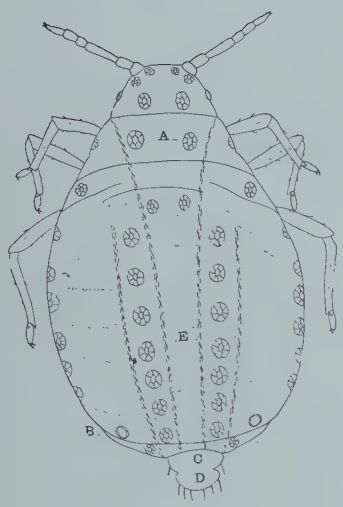

Fig 7

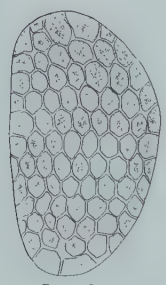

Fig 9

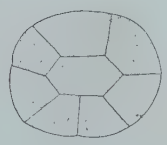

Fig 8.

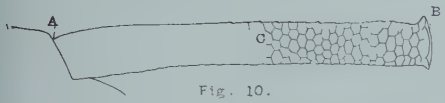

Fig. 10.

Fig. 11

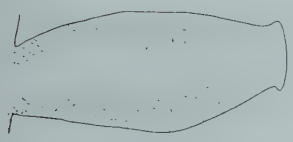

Fig 12

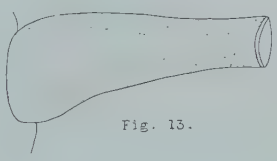

Fig. 13.

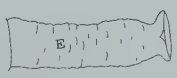

Fig 14

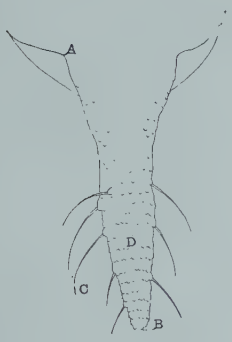

Fig. 15.

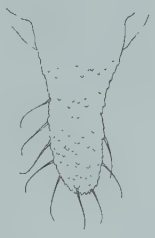

Fig. 16.

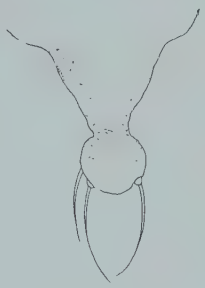

Fig 17.

PLATE III.

This plate illustrates the relative positions of the veins in the subfamilies of the Aphididæ; and in addition is explained the nomenclature bearing on this subject as used in the text.

FIGURE 18.
Subfamily Lachninæ. *Lachnus longistigma.*

This is the largest wing in the entire family. Another special feature is the extent of the stima and stigmal cell proper, which in the stigma is distinctly bounded distally at A, while the stigmatic coloration extends around to the apical margin, I.

FIGURE 19.
Subfamily Aphidinæ. *Aphis brassicæ.*

A is the front or cephalic wing. B is the caudal or hind wing. These letters also represent the wing insertions. In the following the same letters apply to each wing:

1.—Costa or costal vein.
2.—Subcostal vein or cubitus.
3.—First discoidal vein.
4.—Second discoidal vein.
5.—Third discoidal vein.
6.—Second branch.
7.—First branch.
8.—Stigmatic vein.
9.—Stigma.
10.—Fold for hooklet.
11.—Hooklet.

A.—Costal cell.
B.—Basal cell.
C.—First discoidal cell.
D.—Second discoidal cell.
E.—First cubital cell.
F.—Second cubital cell.
G.—Inframarginal cell.
H.—Marginal or stigmal cell.
I.—Apical margin or apex.
G and H are also known as apical cells.

FIGURE 20.
Subfamily Schizoneurinæ. *Schizoneura lanigera.*

The points A and B are the points from which the measurements of breadth are taken, and the letters C and D the points from which the measurement of length of the stigma is taken.

FIGURE 21.
Subfamily Pemphiginæ. *Pemphigus populitransversus.*

FIGURE 22.
Subfamily Chermisinæ. *Phylloxera.*

FIGURES 23 and 24.
Subfamily Aphidinæ.

These figures illustrate some of the anomalous venation that is frequently found in the genus *Callipterus.* The drawing is taken from the wings of *Callipterus genevei.*

PLATE IV.

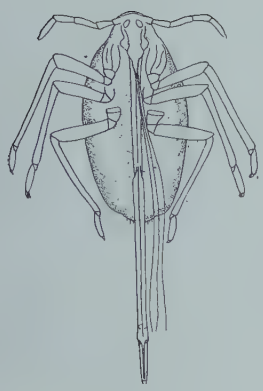

Fig. 25

Fig. 25. a

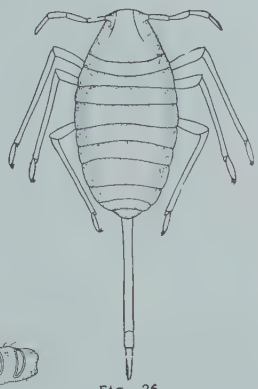

Fig 26.

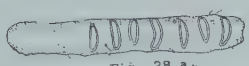

Fig 28,a.

Fig 27. a.

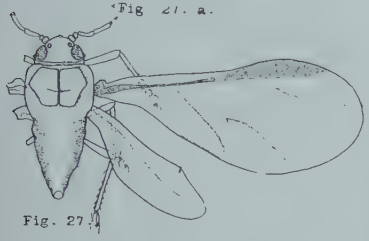

Fig. 27.

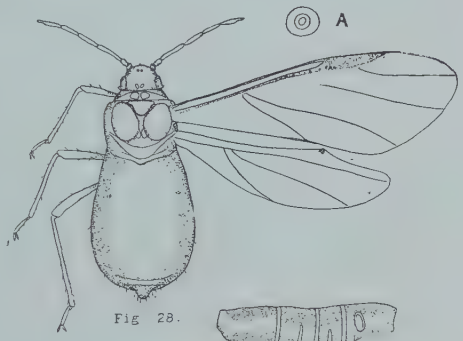

Fig 28.

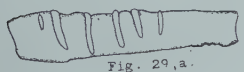

Fig. 29,a.

Fig. 30,a.

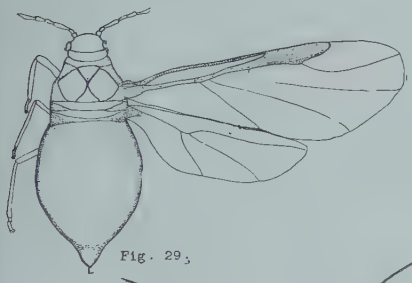

Fig. 29.

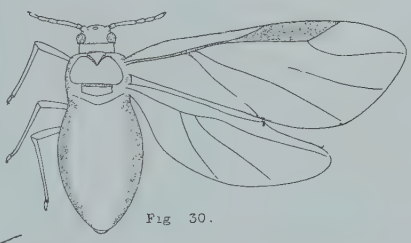

Fig 30.

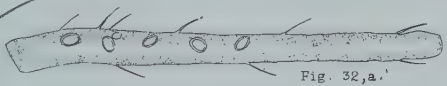

Fig. 32,a.

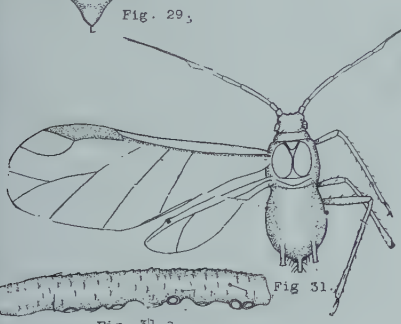

Fig 31.

Fig. 31,a.

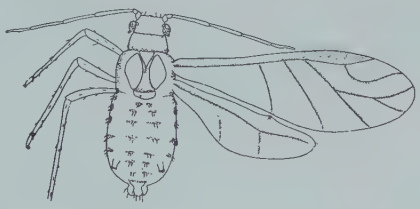

Fig. 32.

PLATE II.

FIGURE 7.

Schizoneura lanigera.

A.—Wax glands.

B.—Tubercular type of honey-tube which is almost obsolete.

C.—Style which is abnormally exserted. Normal in this case when only the knob can be seen.

D.—Knob which when normal is called subobsolete.

E.—Some of the dorsal musculature.

FIGURE 8.

Wax glands of figure 7, enlarged, showing the arrangement of the cells.

FIGURE 9.

Wax gland of a Pemphigina, showing a different number and size of cells than *Schizoneura.*

FIGURE 10.

Honey-tube of *Macrosiphum.* Cylindrical honey-tube which is slightly dilated at the distal end.

A.—Proximal end, or base.*

B.—Distal end, or tip.*

C.—Strong imbrication.

FIGURE 11.

Honey-tube of *Rhopalosiphum.* An incrassate form.

FIGURE 12.

Honey-tube of a *Melanoxanthus.* Vasiform honey-tube of the incrassate type.

FIGURE 13.

Honey-tube of a *Drepanosiphum.* An incrassate honey-tube which is dilated at the base.

FIGURE 14.

A clavate honey-tube.

E.—Weak imbrication.

FIGURE 15.

Style of a *Nectarophorini.* An ensiform type.

A.—Proximal end, or base.†

B.—Distal end, or tip.†

C.—A setaceous hair.

D.—Small spinous processes.

FIGURE 16.

Style of an Aphidinæ. A conical type.

FIGURE 17.

Style of a *Callipterini.* A globular type.

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*These two points also indicate the places between which the measurement is taken for this text.

†These two points also indicate the places between which the measurement of length is taken, as given in this text.

PLATE I.

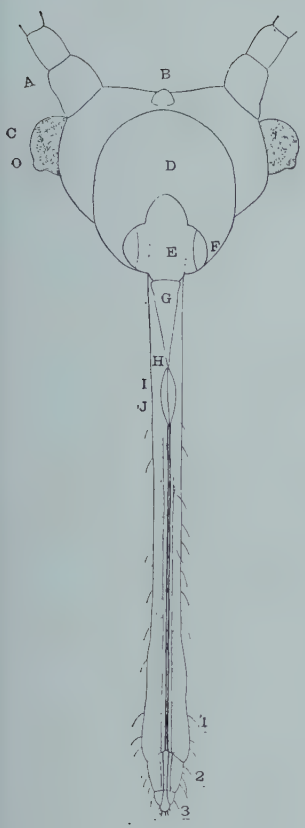


Fig 1

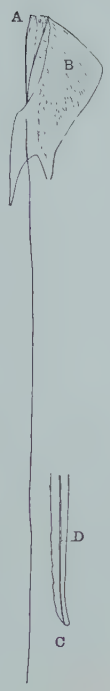


Fig 3

Fig. 4.

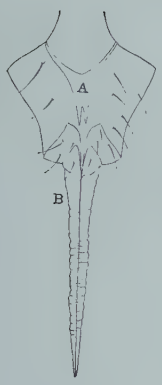


Fig. 2

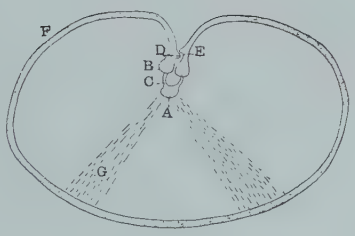


Fig 5.

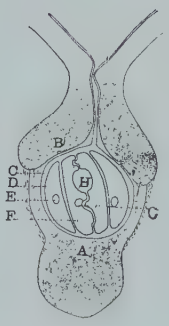


Fig. 6.

PLATE IV.

Fig. 25.
Fig. 26.
Fig. 27.—*Phylloxera caryæcaulis* Fitch.
Fig. 28.—*Pemphigus fraxinifolii* Riley.
Fig. 29.—*Pemphigus populitransverus* Riley.
Fig. 30.—*Pemphigus burrowi*, n. sp.
Fig. 31.—*Myzus prunifoliæ* Fitch.
Fig. 32.—*Callipterus*, n. sp.

PLATE III.

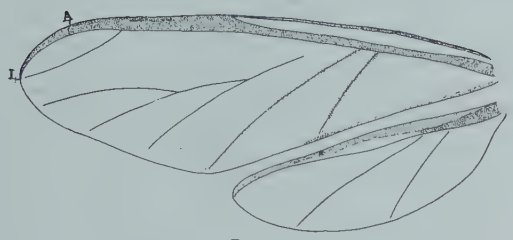


Fig. 18.

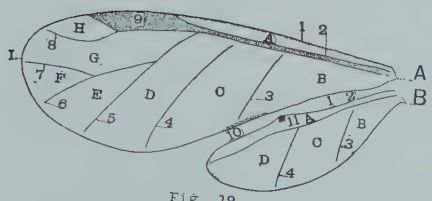


Fig. 19.

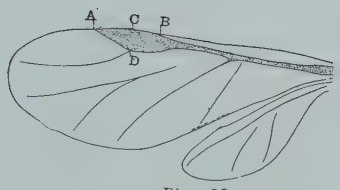


Fig. 20.

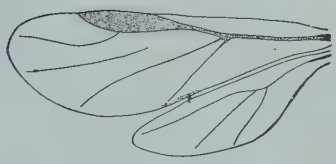


Fig. 21.

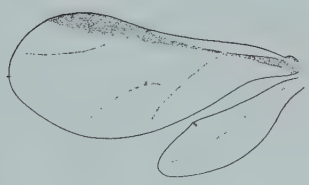


Fig. 22.

Fig. 23.

Fig. 24.

PLATE V.

Fig. 33.—*Pemphigus populicaulis* Fitch.
Fig. 34.—*Tetraneura ulmi* De G.
Fig. 35.—*Aphis* sp. ?
Fig. 36.—*Schizoneura lanigera* Hausm.

PLATE V.

Fig. 33.

Fig 33,a.

Fig. 34

Fig 34,a

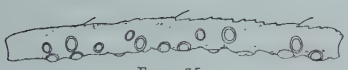


Fig. 35.a

Fig 36,a

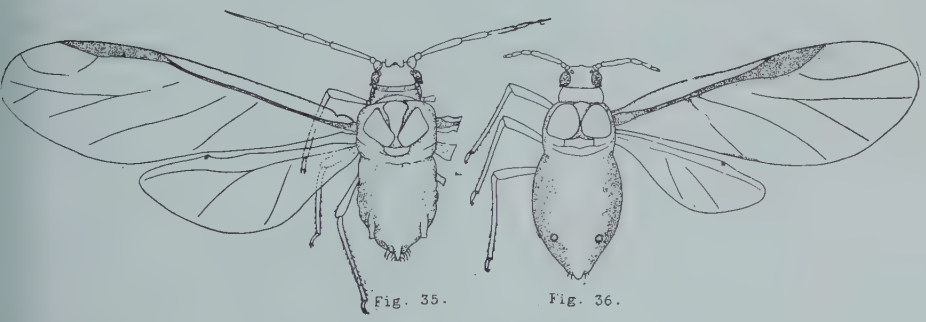


Fig. 35. Fig. 36.

PLATE VI.

Fig. 37.—*Schizoneura americana* Riley.
Fig. 38.—*Schizoneura corni* Fab.
Fig. 39.—*Lachnus longistigma* Monell.
Fig. 40 —*Pemphigus populicaulis* Fitch. Apterous form.
Fig. 41.—*Schizoneura* sp.

PLATE VI.

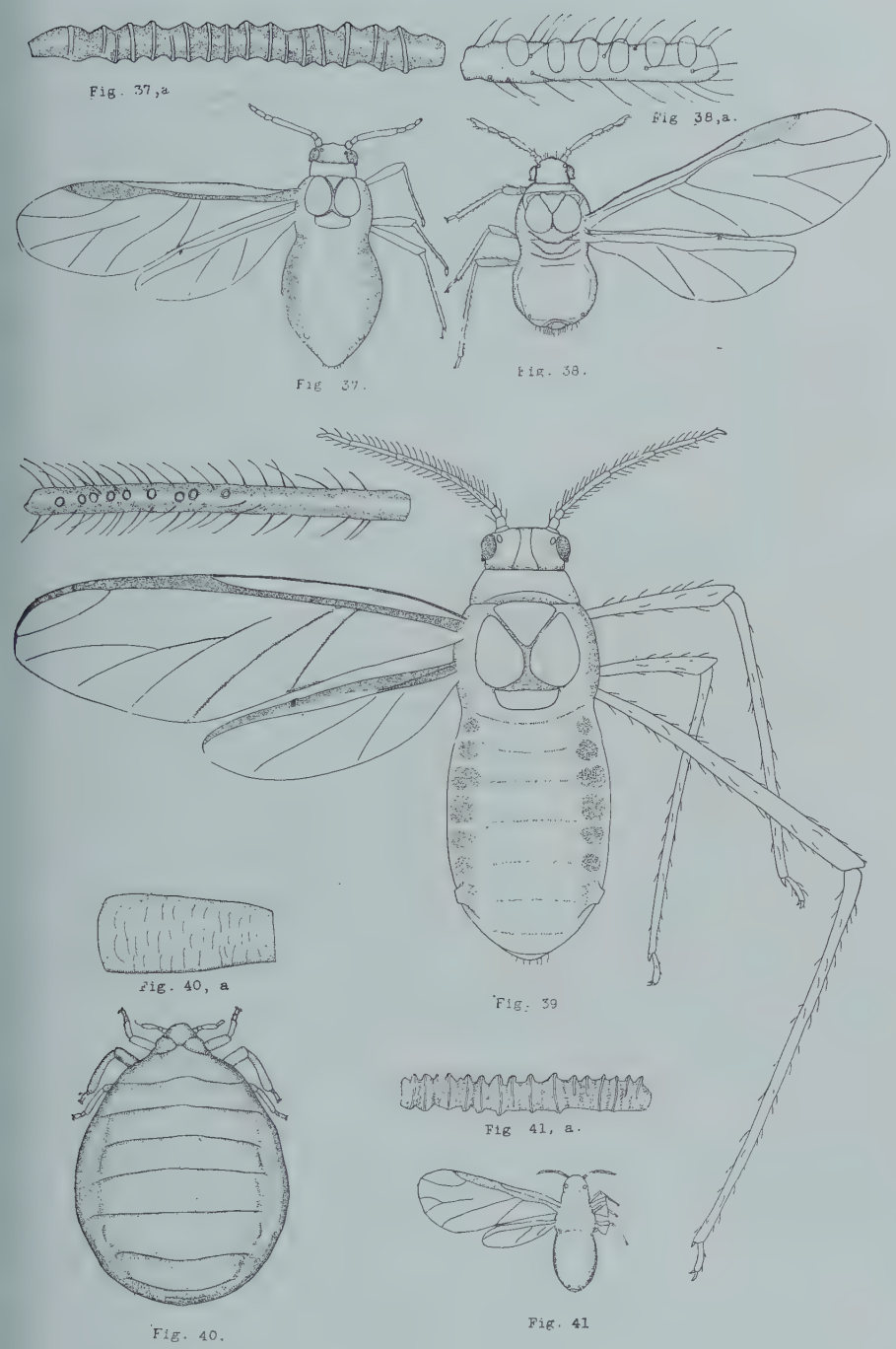


PLATE VII.

Fig. 42.—*Chaitophorus populicola* Fitch.
Fig. 43.—*Chaitophorus.*
Fig. 44.—*Callipterus bellus* Walsh.
Fig. 45.—*Callipterus genevei*, n. sp.
Fig. 46.—*Callipterus.* (See despription of figure 32.)
Fig. 47.—*Chaitophorus stevensis*, n. sp.

PLATE VII.

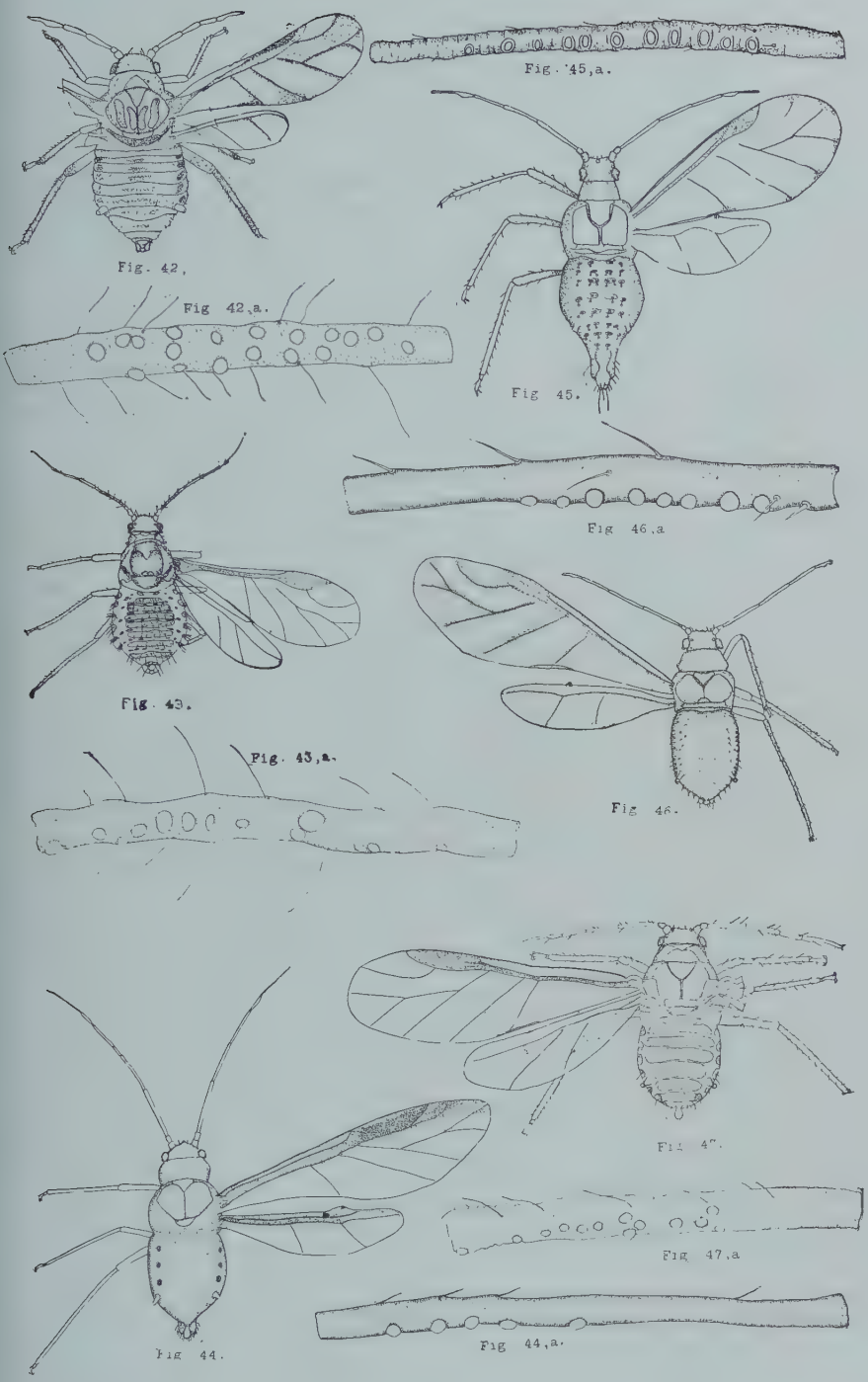


Fig. 45,a.
Fig. 42,
Fig 42,a.
Fig 45.
Fig 46,a
Fig. 43.
Fig. 43,a.
Fig 46.
Fig 47.
Fig 47,a
Fig 44.
Fig 44,a.

PLATE VIII.

Fig. 48.—*Aphis nerii* Fonsc.
Fig. 49.—*Siphocoryne avenæ* Fabr.
Fig. 50.—*Sipha rubifolii* Thomas.

PLATE VIII.

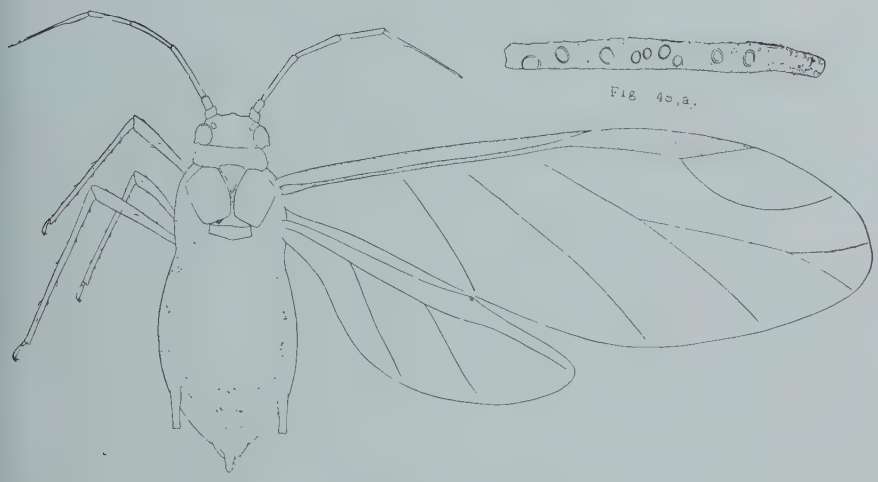


Fig 48,a.

Fig 48

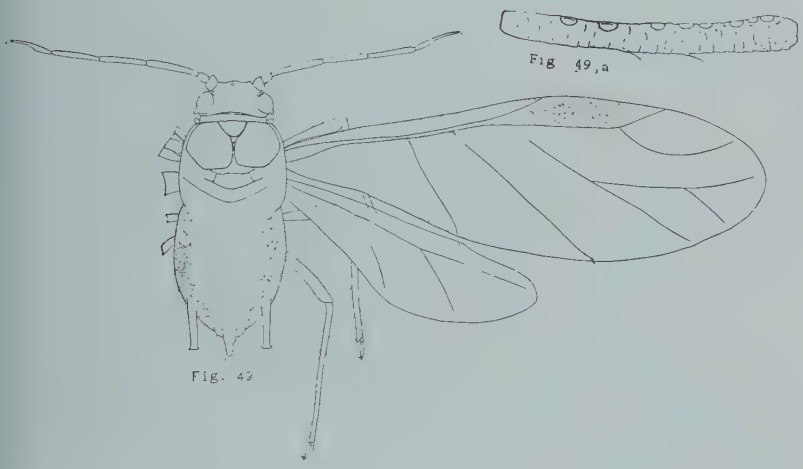


Fig 49,a

Fig. 49

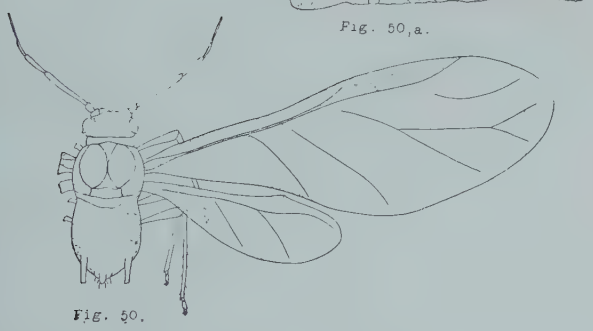


Fig. 50,a.

Fig. 50.

PLATE IX.

Fig. 51.—*Myzus biennis*, n. sp.
Fig. 52.—*Aphis* sp. ?
Fig. 53.—*Myzus achyrantes* Monell.
Fig. 54.—*Myzus cerasi* Fab.
Fig. 55.—*Rhopalosiphum dianthi* Schrank.
Fig. 56.—*Callipterus asclepiadis* Monell.

PLATE IX.

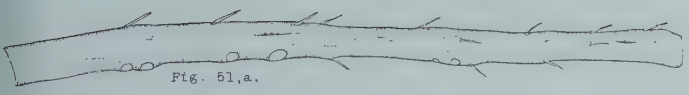


Fig. 51,a.

Fig. 51.

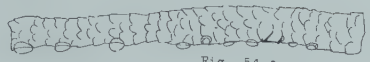


Fig 54,a.

Fig. 54

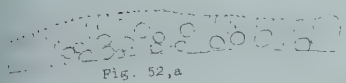


Fig. 52,a

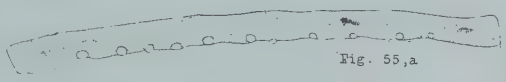


Fig. 55,a

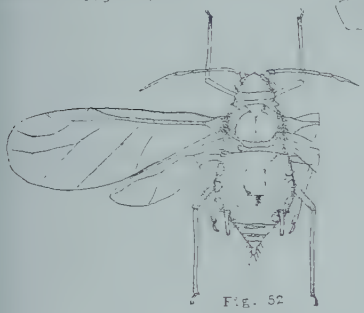


Fig. 52

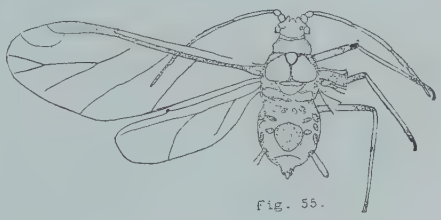


Fig. 55.

Fig. 56,a.

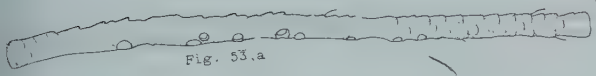


Fig. 53,a

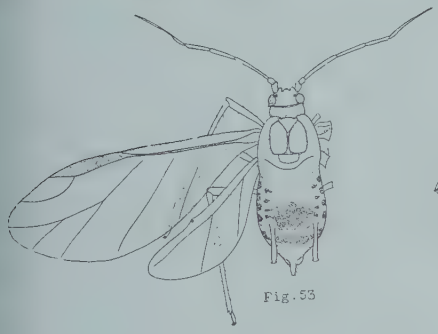


Fig.53

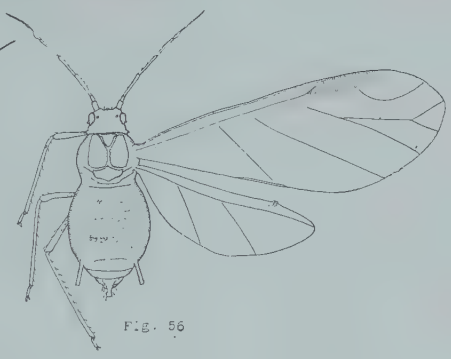


Fig. 56

PLATE X.

Fig. 57.—*Aphis* sp. ?
Fig. 58.—*Chaitophorus negundinis* Thomas.
Fig. 59.—*Aphis cerasifoliæ* Fitch.
Fig. 60.—*Aphis sambuci* Linn.
Fig. 61.—*Aphis brassicæ* Linn.

PLATE X.

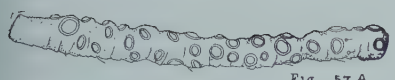


Fig 57 A

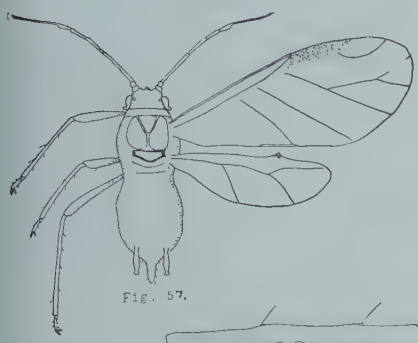


Fig. 57.

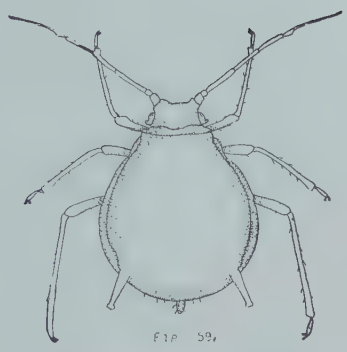


Fig 59.

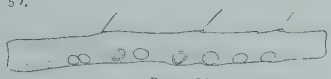


Fig. 58.a.

Fig 60,a.

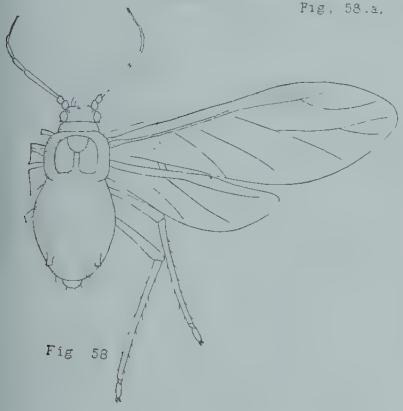


Fig 58

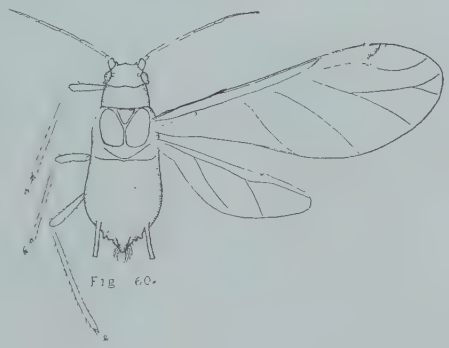


Fig 60.

Fig 61,a

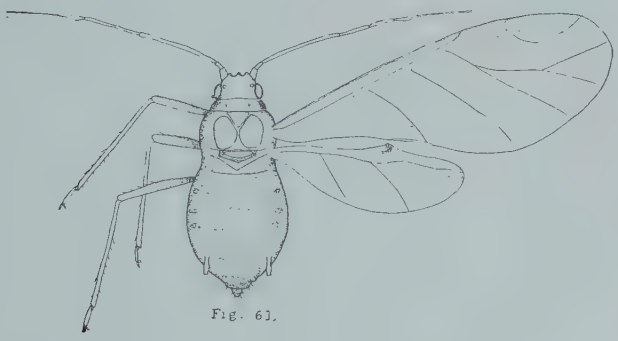


Fig. 61.

PLATE XI.

Fig. 62.—*Aphis* sp. ?
Fig. 63.—(Description lost.)
Fig. 64.—*Aphis gossypii* Glover.
Fig. 65.—*Aphis vitis* Scop.
Fig. 66.—*Aphis maidis* Fitch.
Fig. 67.—*Aphis rumicis* Linn.

PLATE XI.

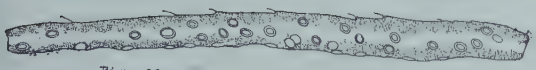


Fig. 62,a.

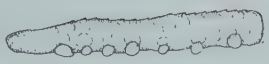


Fig. 65,a.

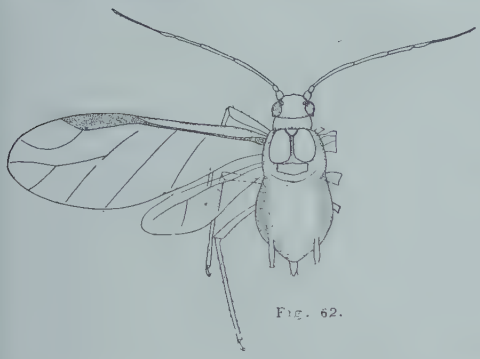


Fig. 62.

Fig. 65.

Fig. 63,a.

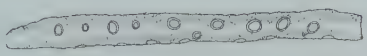


Fig. 66,a.

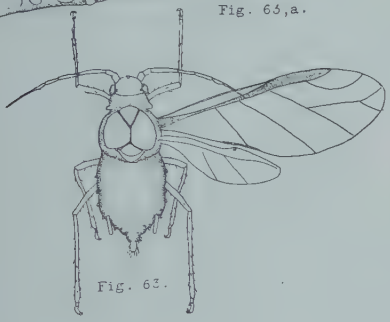


Fig. 63.

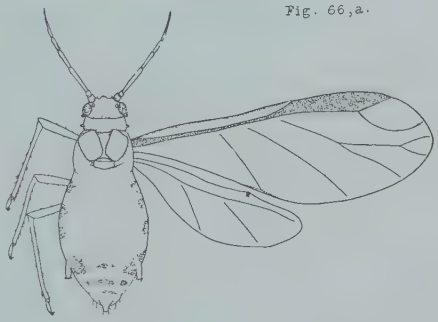


Fig. 66.

Fig. 64,a.

Fig. 67,a.

Fig. 64.

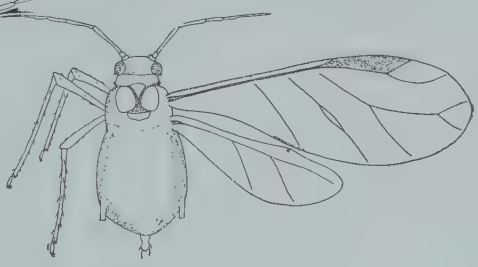


Fig. 67.

PLATE XII.

Fig. 68.—(Description lost.)
Fig. 69.—*Aphis gossypii* Glover.
Fig. 70.—*Macrosiphum.*
Fig. 71.—*Aphis* sp. ?

PLATE XII.

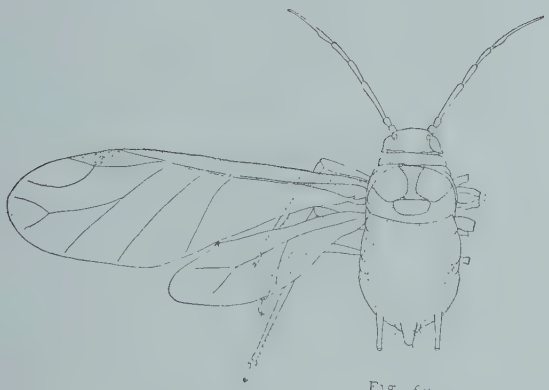


Fig. 68.

Fig. 68.a.

Fig 69,a

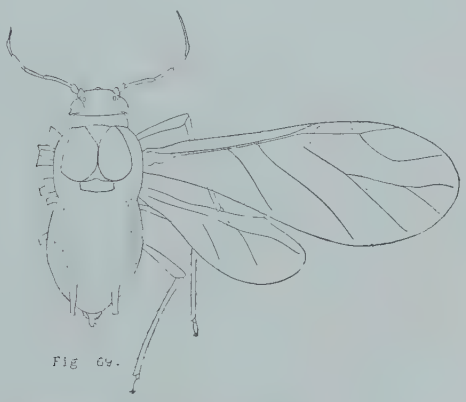


Fig 69.

Fig. 70,a.

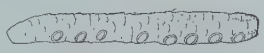


Fig. 71,a.

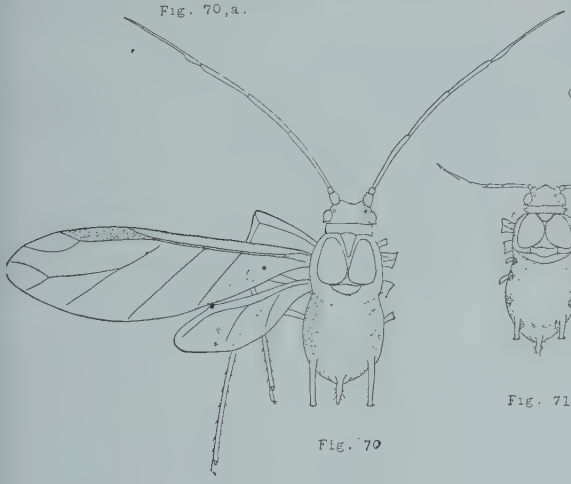


Fig. 70

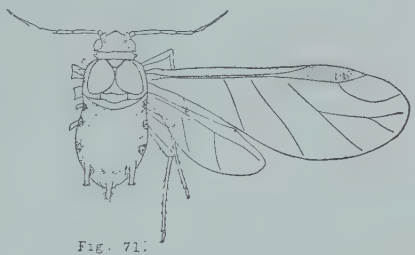


Fig. 71.

PLATE XIII.

Fig. 72.—*Aphis nerii.* (See description to figure 48.)
Fig. 73.—*Rhopalosiphum rois* Monell.
Fig. 74.—*Aphis cratægifolia* Fitch.

PLATE XIII.

Fig. 72,a

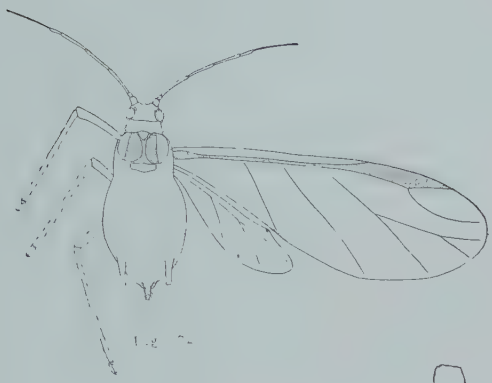


Fig. 72

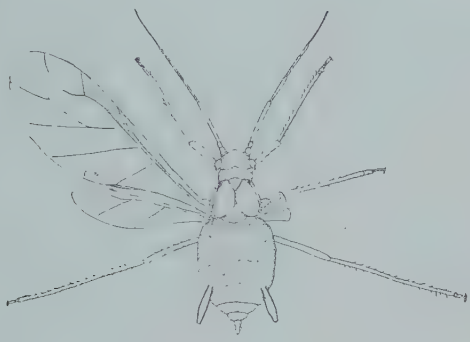


Fig. 73

Fig. 73,a

Fig. 74

Fig. 74,a

PLATE XIV.

Fig. 75.—*Aphis*, n. sp.
Fig. 76.—*Callipterus*, n. sp.
Fig. 77.—*Aphis*, n. sp.

PLATE XIV.

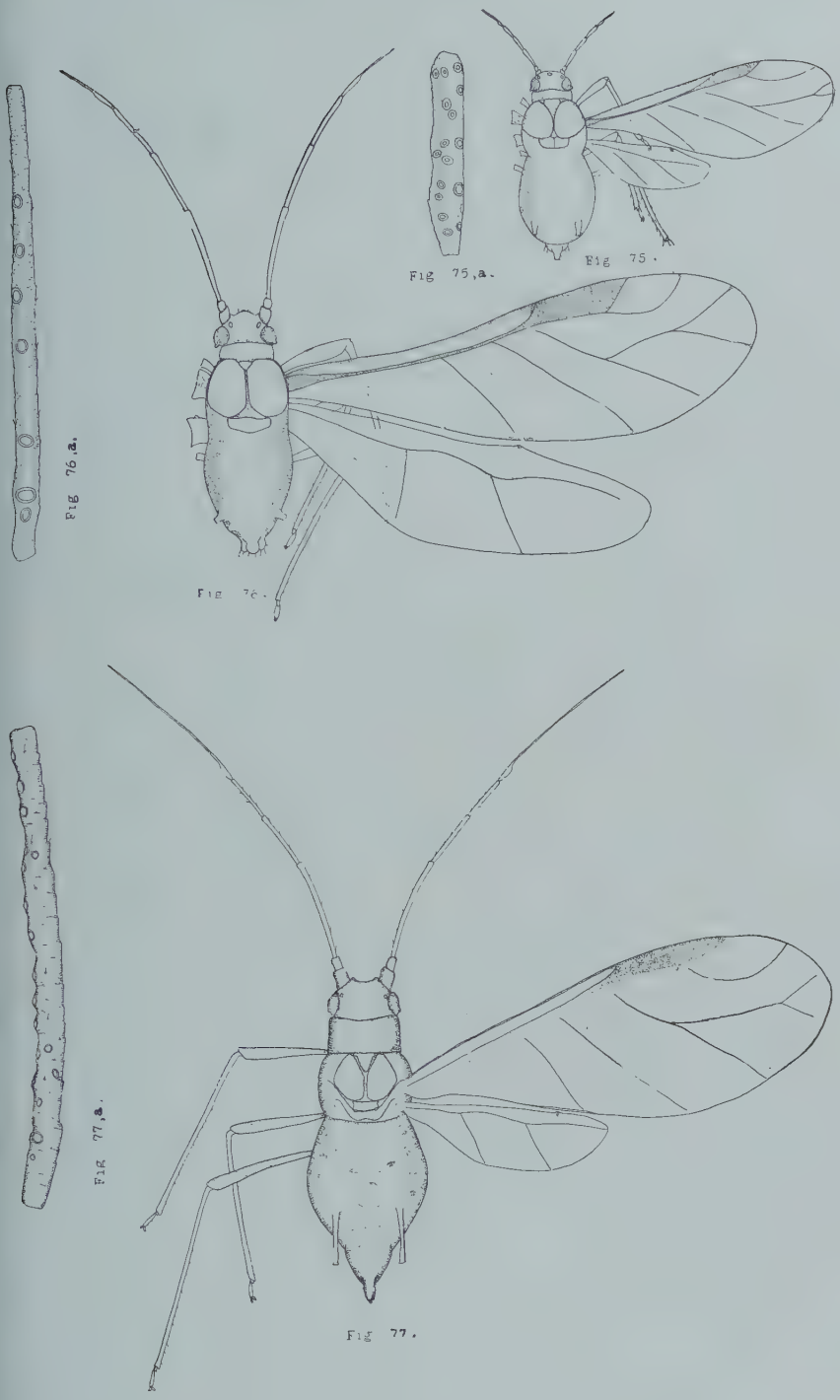


PLATE XV.

Fig. 78.—*Rhopalosiphum violæ* Pergande.
Fig. 79.—*Macrosiphum*, n. sp.
Fig. 80.—*Macrosiphum pisi* Kalt.

PLATE XV.

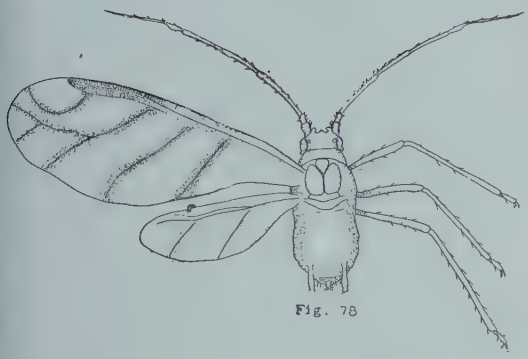


Fig. 78

Fig. 78,a.

Fig. 79.

Fig. 79,a.

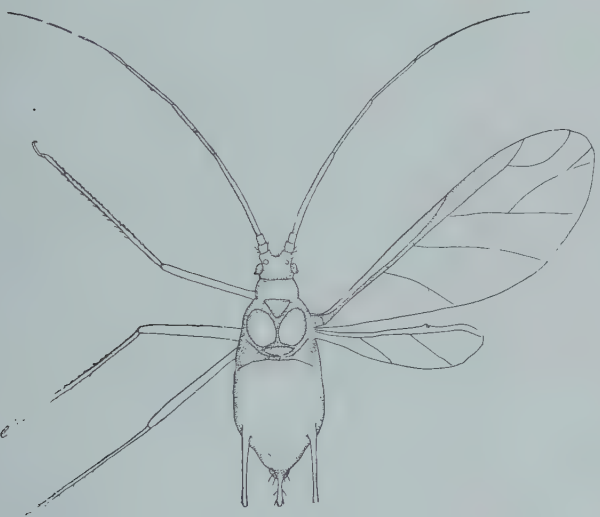


Fig. 80.

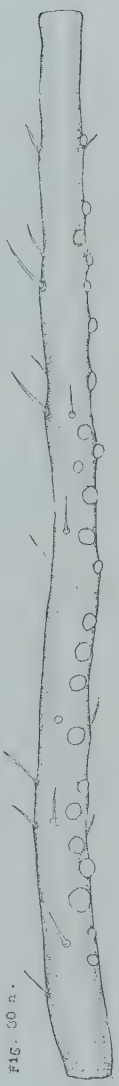


Fig. 80,a.

PLATE XVI.

Fig. 81.—*Myzus persicæ* Sulz.
Fig. 82.—*Aphis ribis*, n. sp.
Fig. 83.—*Aphis cardui* Linn.
Fig. 84.—*Macrosiphum squarrosa*, n. sp.

PLATE XVI.

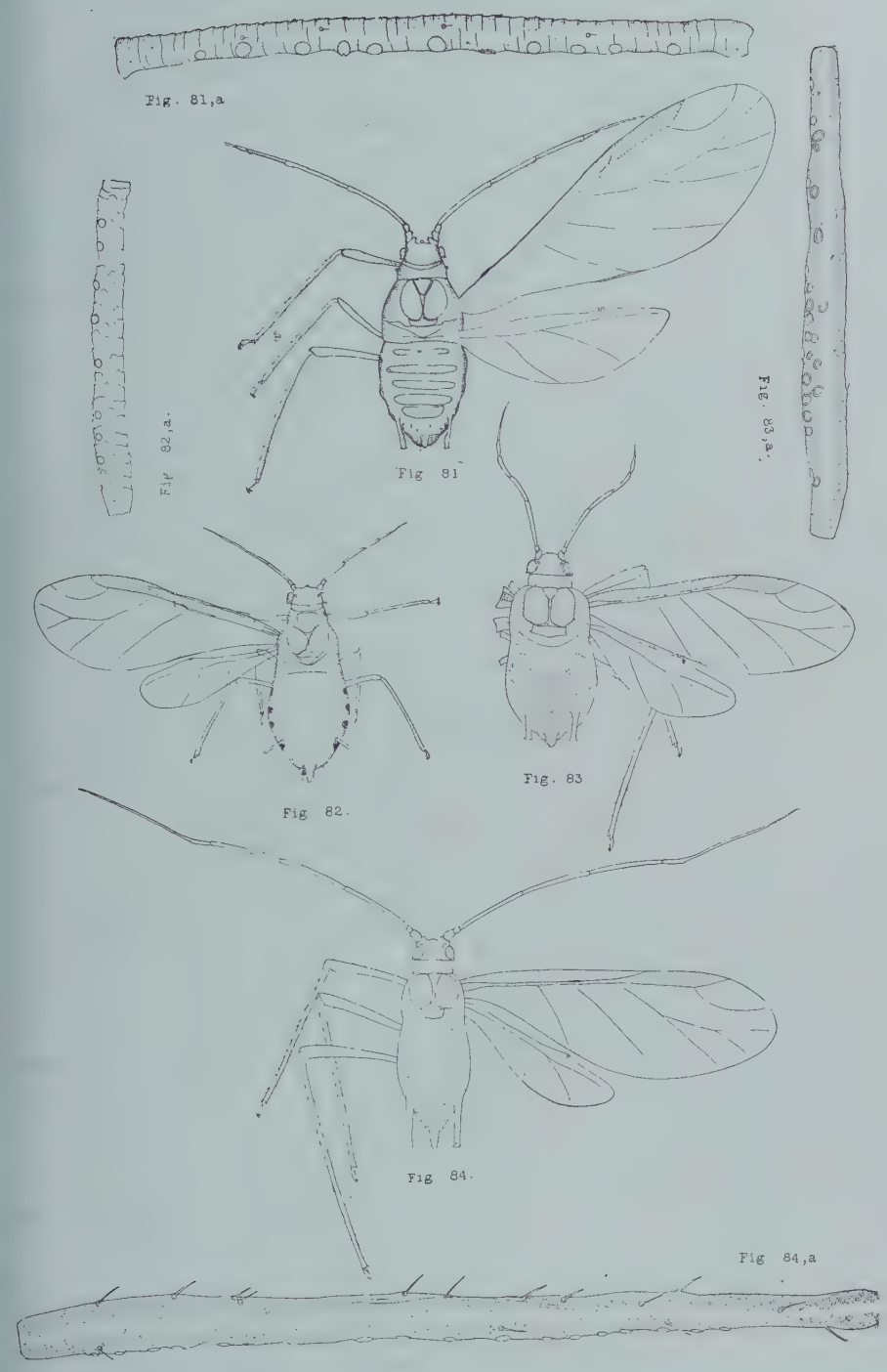


PLATE XVII.

Fig. 85.—*Macrosiphum chrysanthemi* Oestl.
Fig. 86.—*Macrosiphum* sp. ?

PLATE XVII.

Fig. 85,a.

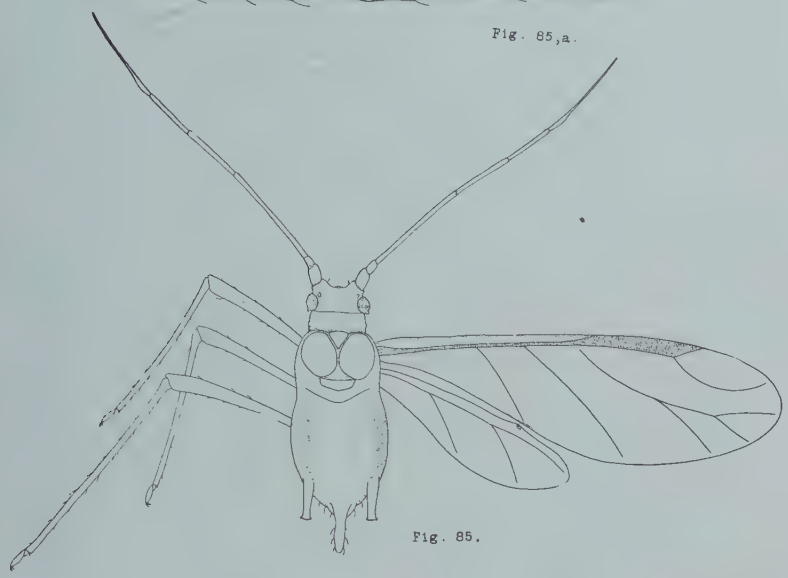


Fig. 85.

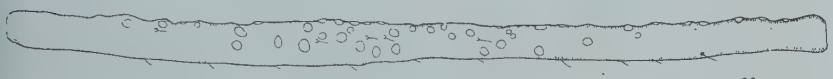


Fig 86,a

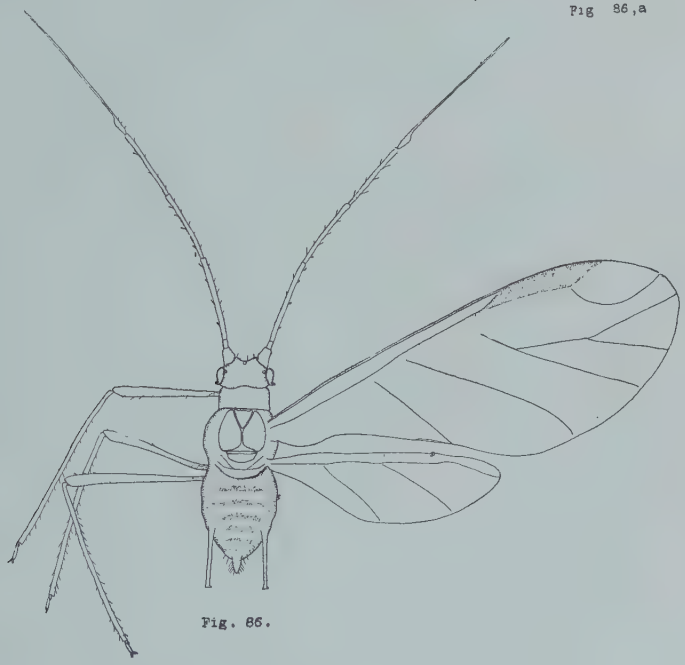


Fig. 86.

PLATE XVIII.

Fig. 87.—*Macrosiphum ambrosiæ* Thomas.
Fig. 89.—*Macrosiphum* sp. ?

PLATE XVIII.

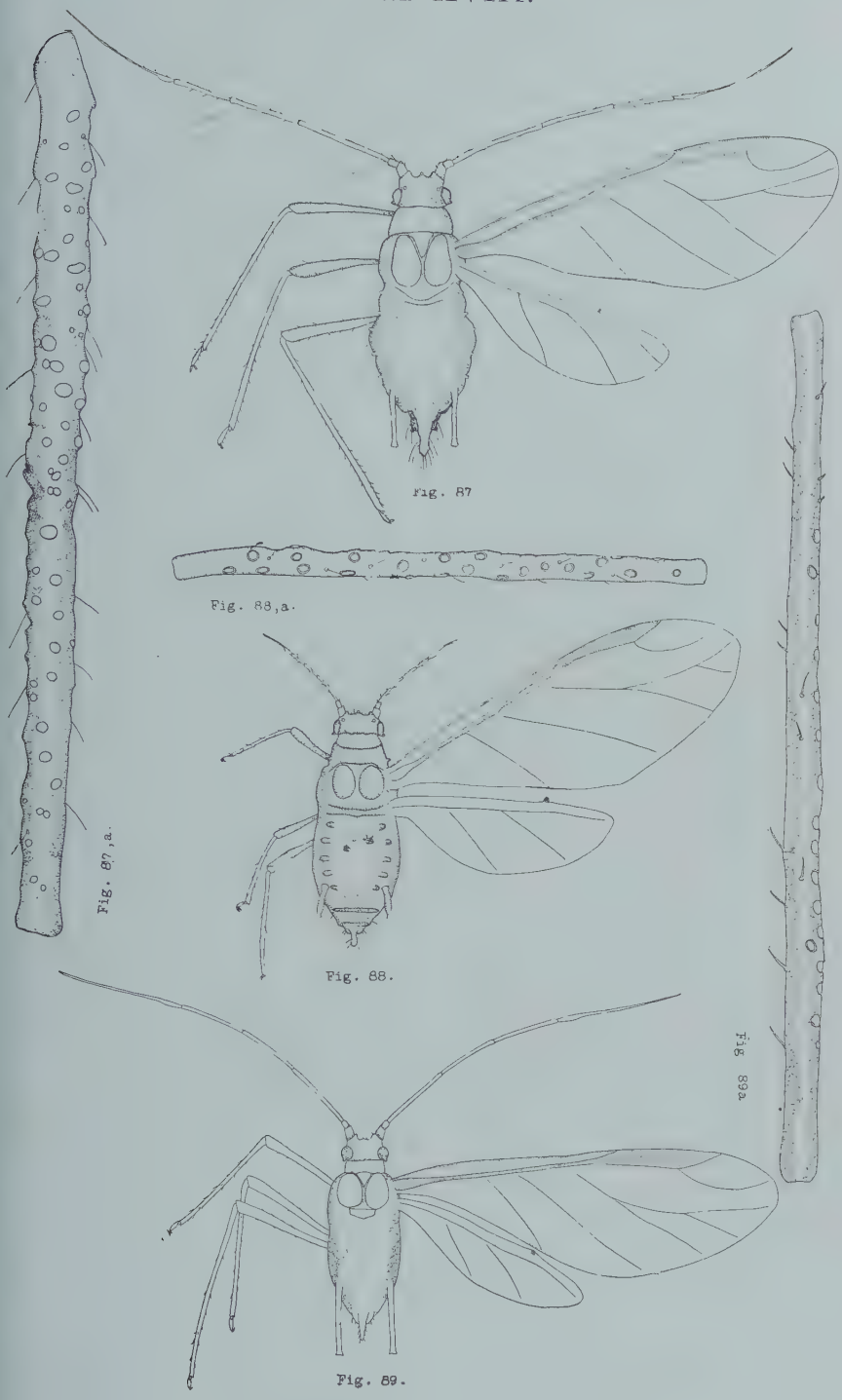


PLATE XIX.

Fig. 90.—*Macrosiphum* sp. ?
Fig. 91.—*Aphis sambucifolia* Fitch.
Fig. 92.—*Macrosiphum erigeronensis* Thomas.

PLATE XIX.

Fig. 90,a

Fig. 90

Fig 91,a

Fig. 92,a.

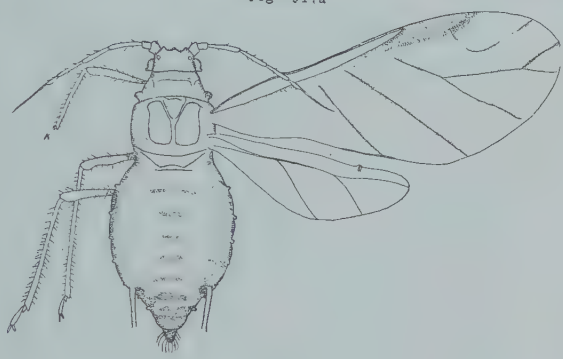


Fig. 91

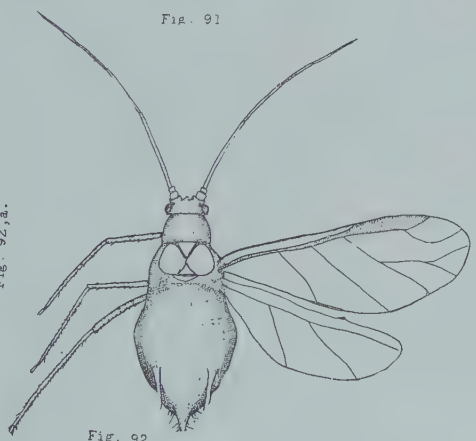


Fig. 92.

PLATE XX.

Fig. 93.—*Macrosiphum*, n. sp.
Fig. 94.—*Drepanosiphum acerifolii* Thomas.
Fig. 95.—*Chaitophorus flabellus*, n. sp.
Fig. 96.—*Phorodon*, n. sp.

PLATE XX.

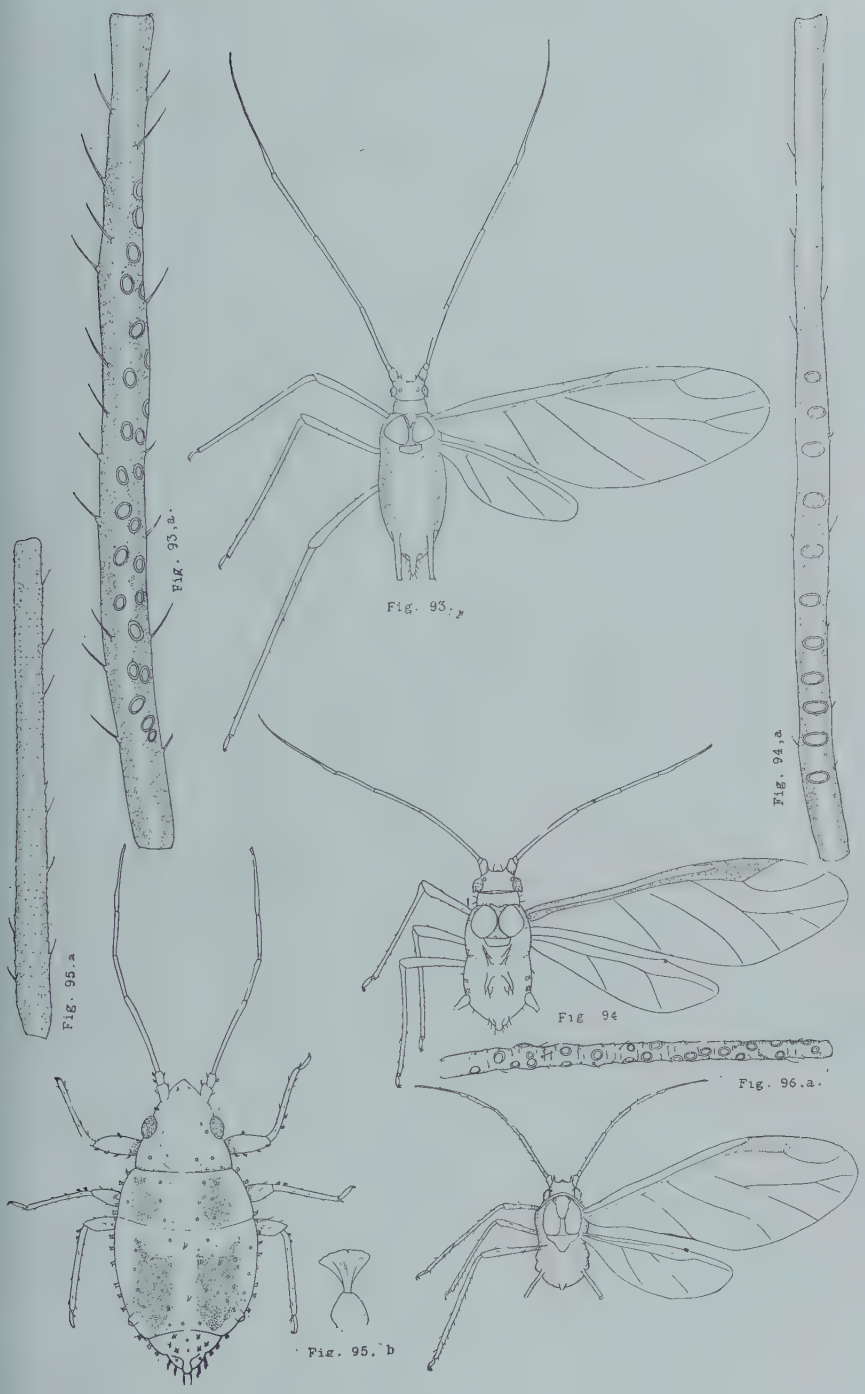


PLATE XXI.

Fig. 97.—*Macrosiphum*, n. sp.
Fig. 98.—*Macrosiphum* sp.

PLATE XXI.

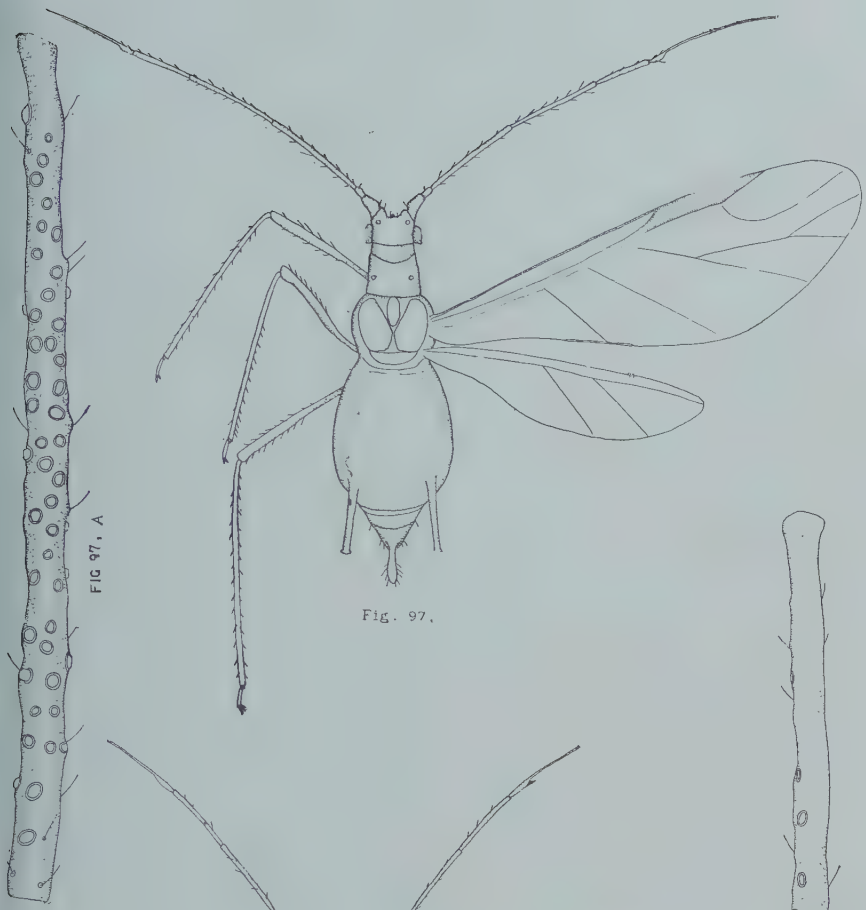


Fig. 97.

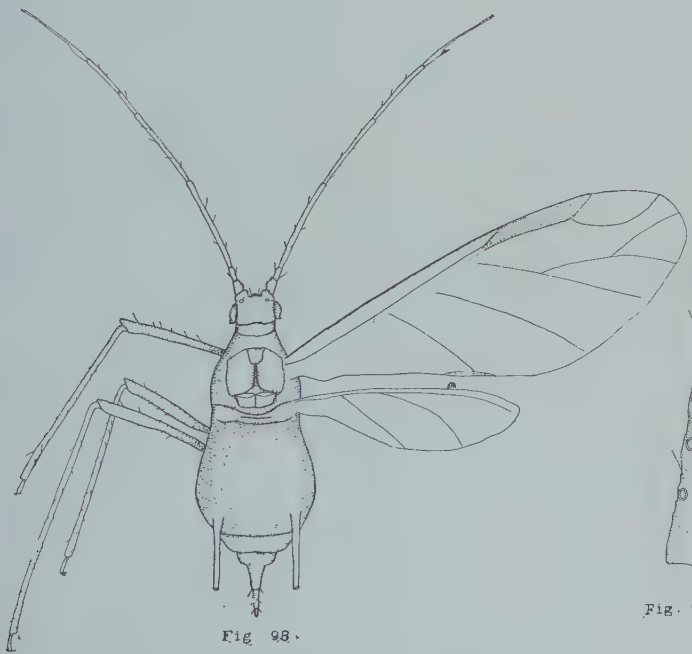


Fig 98.

Fig. 98, a.

PLATE XXII.

Fig. 99.—*Macrosiphum ambrosiæ* Thomas.
Fig. 100.—*Aphis veronia*, n. sp.
Fig. 101.—*Phylloxera caryæcaulis* Fitch. (Stem-mother.)

PLATE XXII.

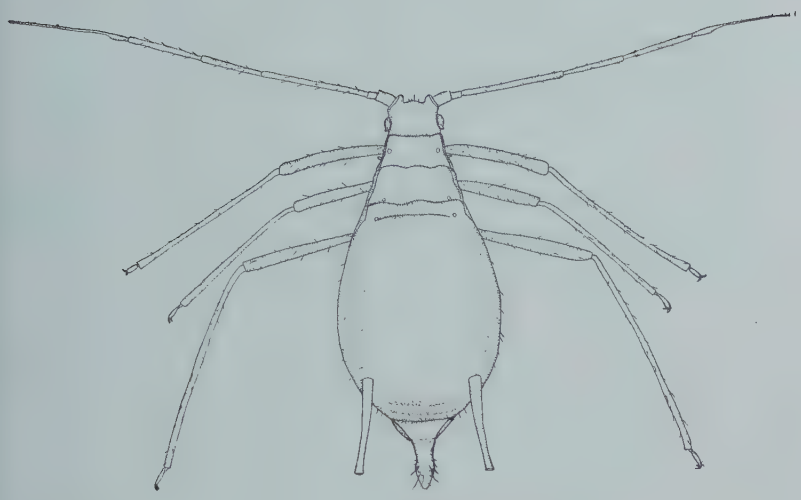


Fig. 99

Fig. 100,a

Fig. 100.

Fig. 101.

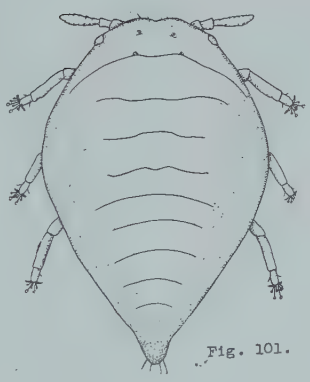


Fig. 101.

PLATE XXIII.

FIGS. 1 and 2. *Parlatoria zizyphus* Lucas, showing the more regular arrangement of the dorsal glands. Drawn with 4 ocular and $\frac{1}{6}$ objective.

a.—anal orifice.
b.—chitinized disk.
c.—dorsal-gland.
d.—marginal gland.
e.—median dorsal gland.
f.—dorsal gland orifice.
g.—marginal-gland orifice.
h.—pair of glands between anal orifice and the third lobe.
i.—first lobe.
j.—second lobe.
k.—third lobe.
l.—fourth lobe.
n.—plate.
o.—spine.
p.—spinnerets, circumgenital, grouped or ventral glands.
q.—anterior group of circumgenital glands.
r.—posterior group of circumgenital glands.

PLATE XXIII.

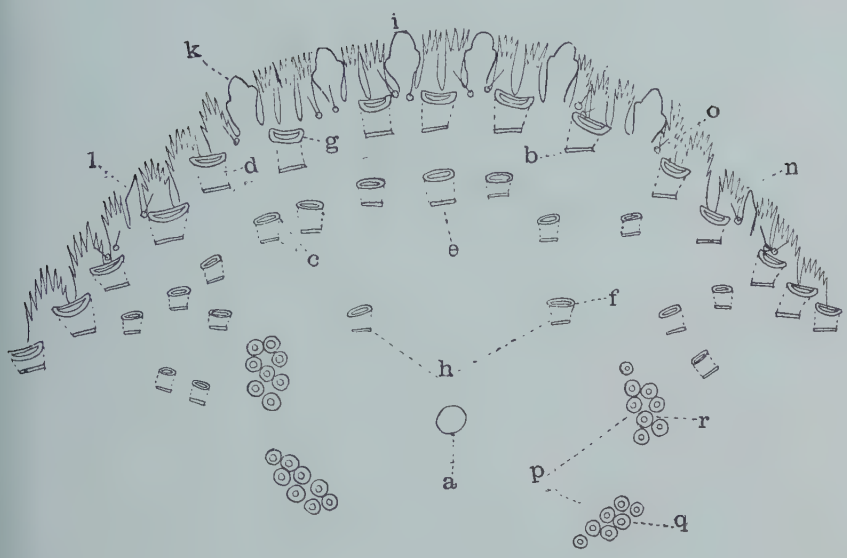


Fig. 1.

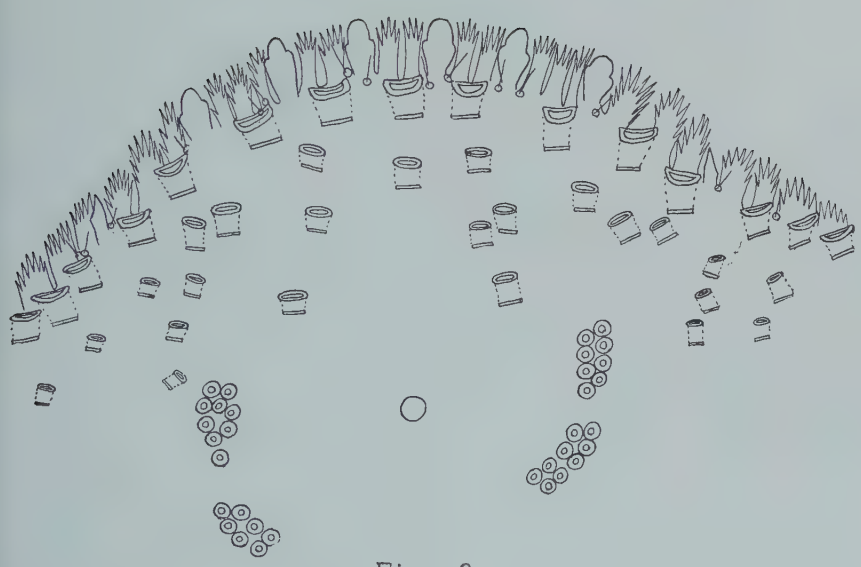


Fig. 2.

PLATE XXIV.

FIG. 1. *Parlatoria aonidiformis* Green. The circumgenital glands are not shown because the specimens studied were not well enough cleared to show the glands satisfactorily and no other specimens were available. Drawn with 4 ocular and ¼ objective.

FIG. 2. *Parlatoria blanchardi* Targ. Drawn with 4 ocular and $\frac{1}{6}$ objective.

FIG. 3. *Parlatoria victrix* Ckll. Drawn with 4 ocular and ¼ objective.

PLATE XXIV.

Fig.1

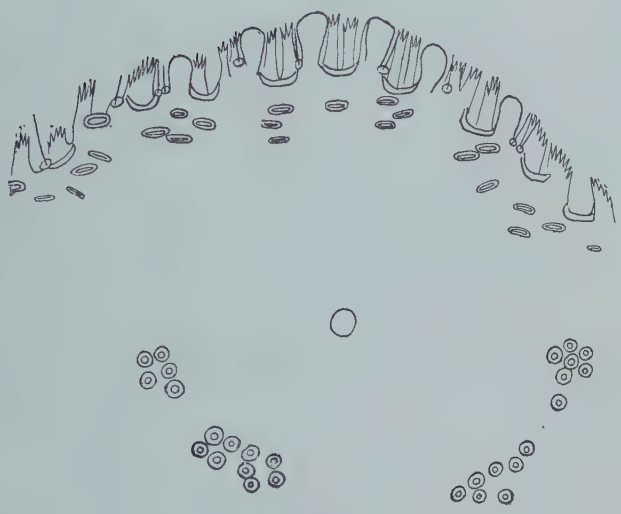


Fig. 2.

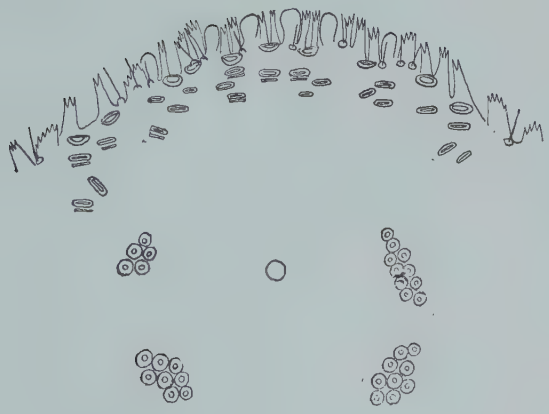


Fig. 3.

PLATE XXV.

FIG. 1.—*Parlatoria proteus* Curt. Drawn with 4 ocular and $\frac{1}{6}$ objective.

FIG 2.—*Parlatoria proteus pergandei* Comst. Drawn with 4 ocular and $\frac{1}{4}$ objective.

PLATE XXV.

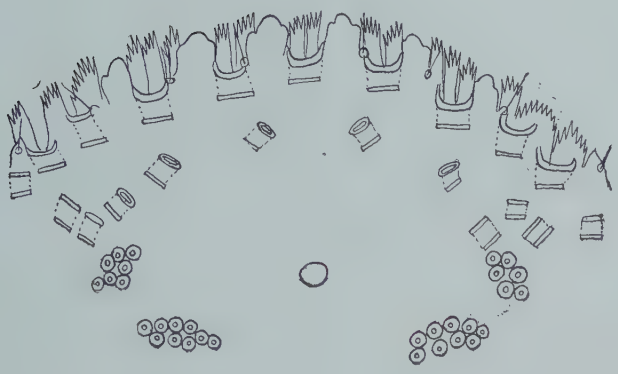


Fig. 1

Fig. 2.

PLATE XXVI.

FIG. 1.—*Parlatoria mytilaspiformis* Green. Drawn with 4 ocular and $\frac{1}{4}$ objective.

FIG. 2.—*Parlatoria mytilaspiformis* Green. Drawn with 4 ocular and $\frac{1}{6}$ objective.

PLATE XXVI.

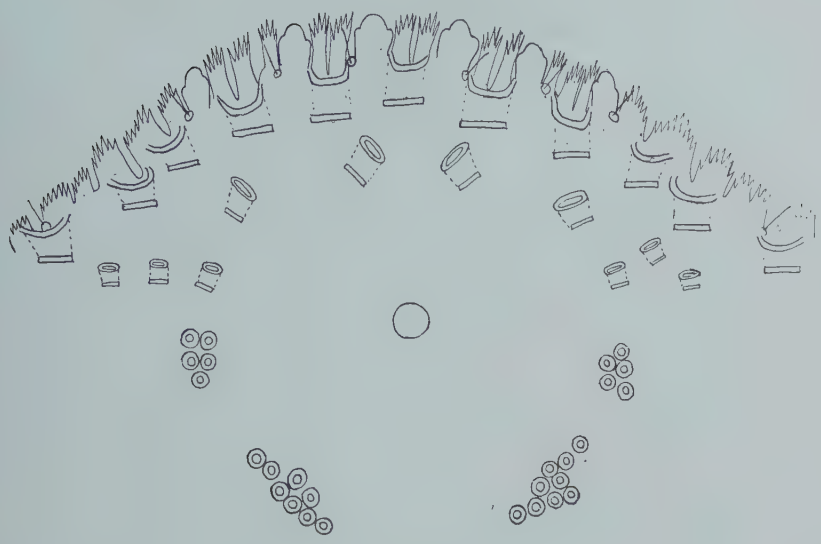


Fig. 1.

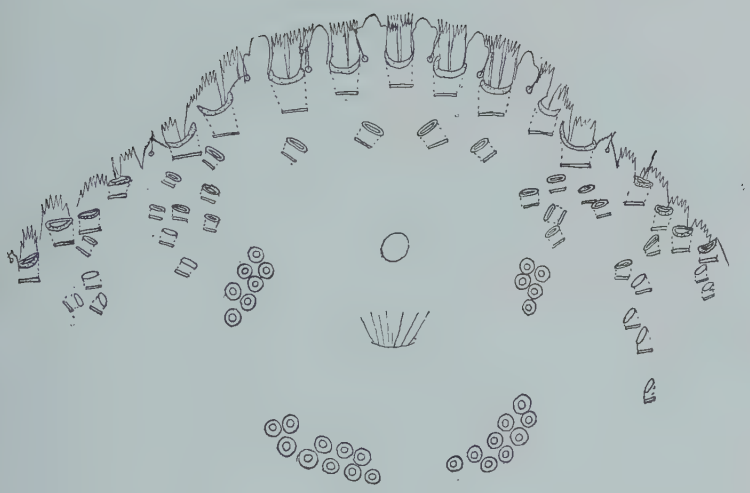


Fig. 2.

PLATE XXVII.

FIG. 1.—*Parlatoria theæ* Ckll. Drawn with 4 ocular and $\frac{1}{4}$ objective.

FIG 2.—*Parlatoria theæ euonymi* Ckll. Drawn with 4 ocular and $\frac{1}{4}$ objective.

FIG. 3.—*Parlatoria theæ viridis* Ckll. Drawn with 4 ocular and $\frac{1}{4}$ objective.

PLATE XXVII.

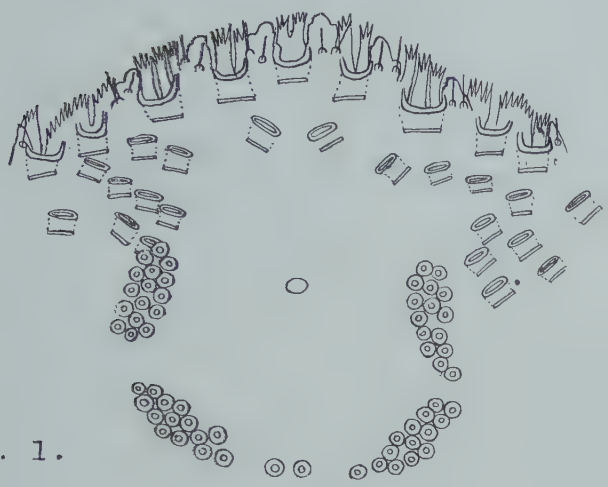


Fig. 1.

Fig. 2.

Fig. 3.

PLATE XXVIII.

FIG. 1.—*Parlatoria proteus crotonis* Ckll. Drawn with 4 ocular and $\frac{1}{4}$ objective.

FIG. 2.—*Parlatoria cingala* Green. Drawn with 4 ocular and $\frac{1}{6}$ objective.

PLATE XXVIII.

Fig. 1

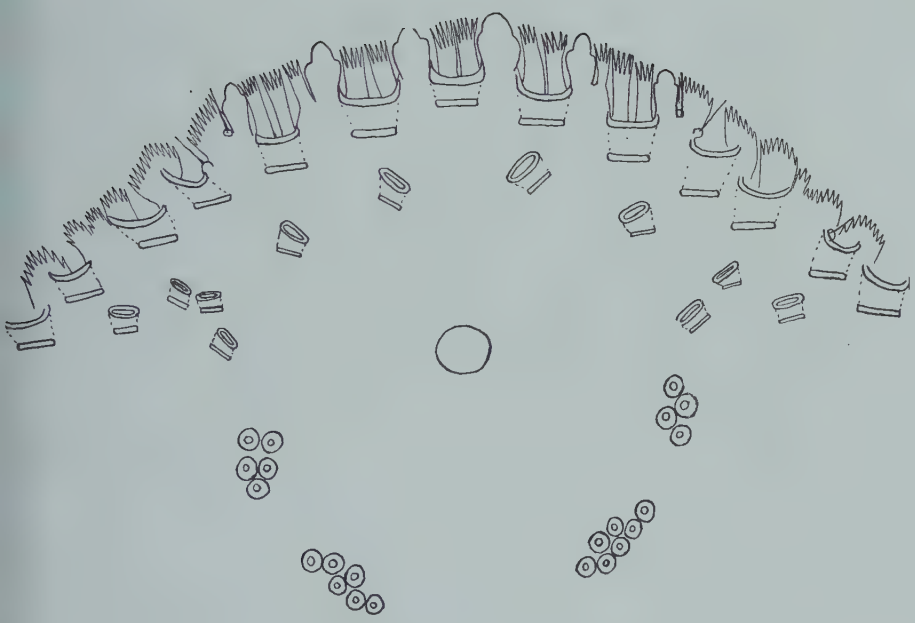


Fig. 2.

PLATE XXIX.

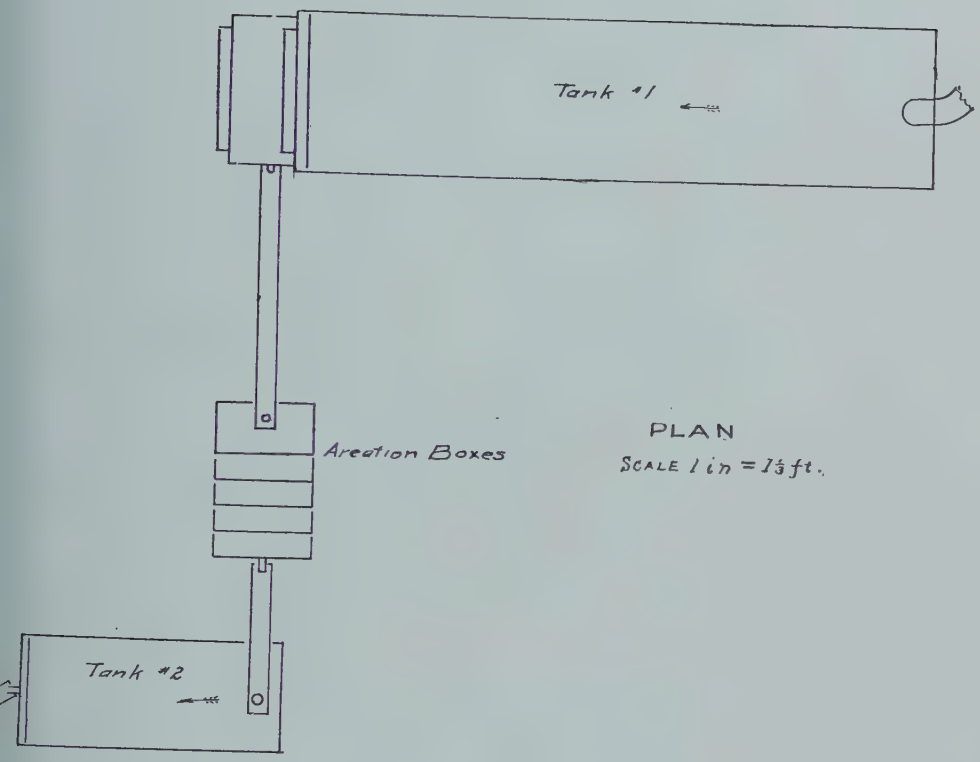
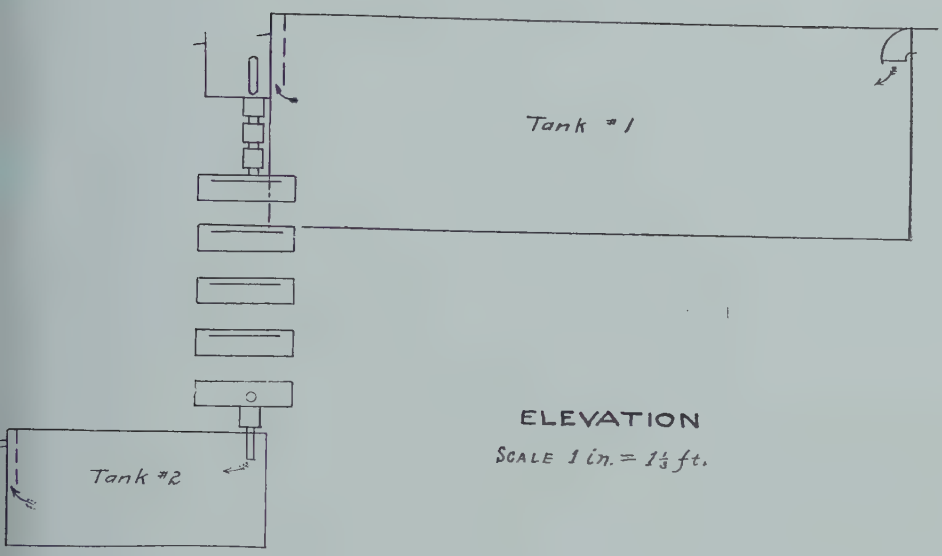


PLATE XXX.



ELEVATION

SCALE 1 in. = 1⅓ ft.

PLATE XXXI.

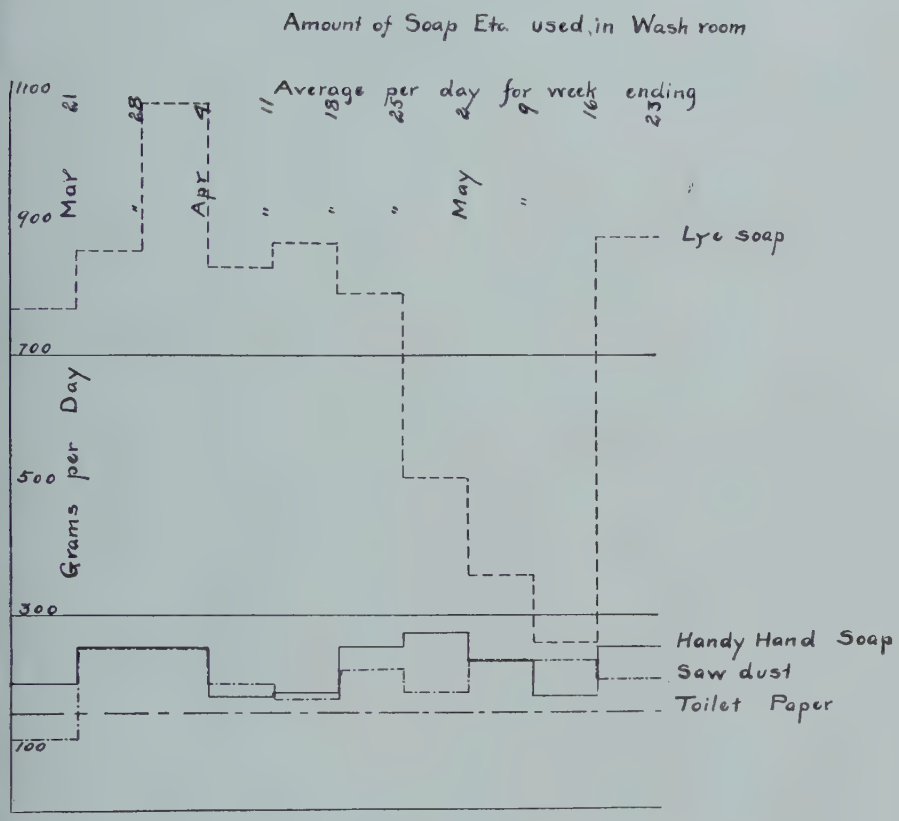

Amount of Soap Etc. used in Wash room
Average per day for week ending
21
28
4
11
18
25
2
9
16
23
Mar
Apr
May
1100
900
700
500
300
100
Grams per Day
Lye soap
Handy Hand Soap
Saw dust
Toilet Paper

PLATE XXXII.

Total Solids.

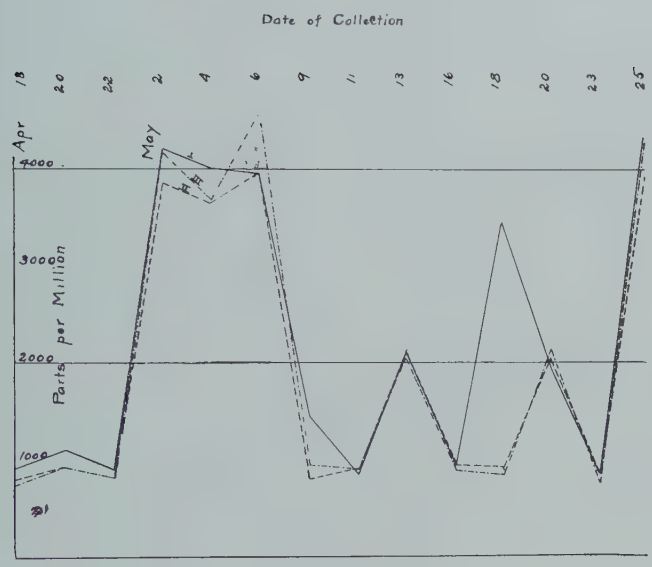


PLATE XXXIII.

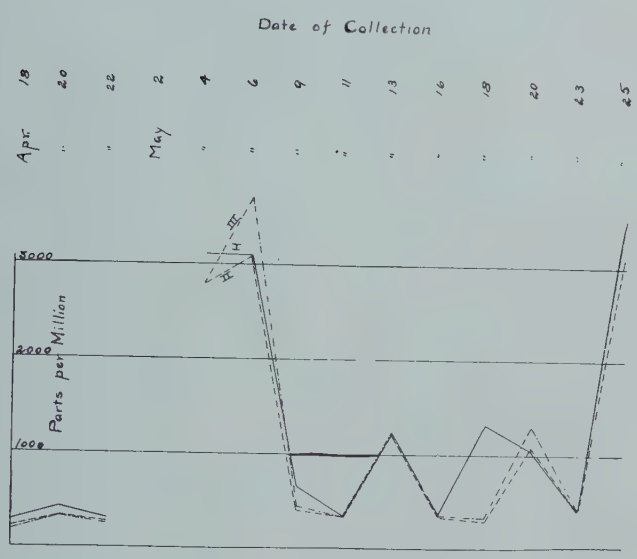


PLATE XXXIV.

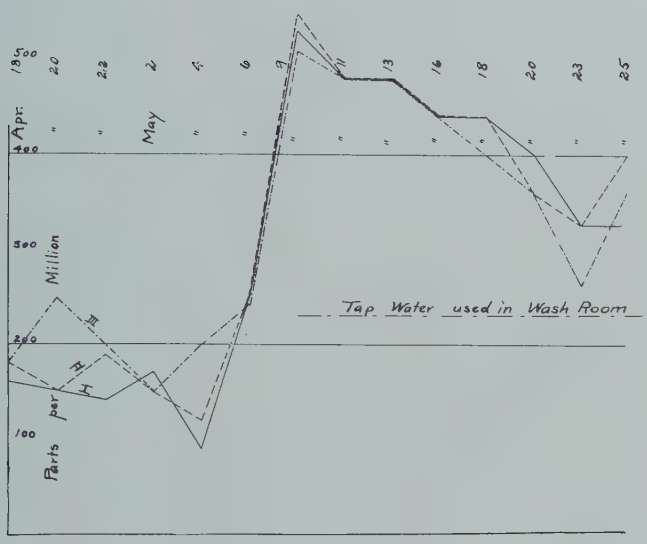

Hardness
Parts per Million
100
200
300
400
500
Apr.
May
19
20
22
2
4
6
9
11
13
16
18
20
23
25
Tap Water used in Wash Room

PLATE XXXV.

Chlorine

Date of Collection

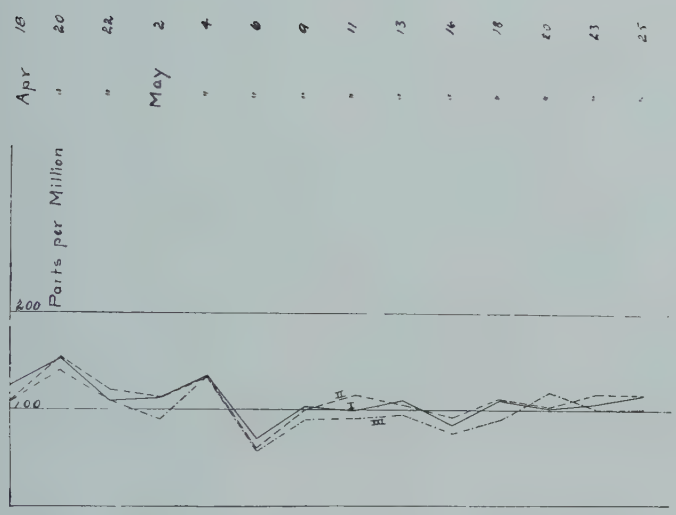


PLATE XXXVI.

Oxygen Consumed

Date of Collection

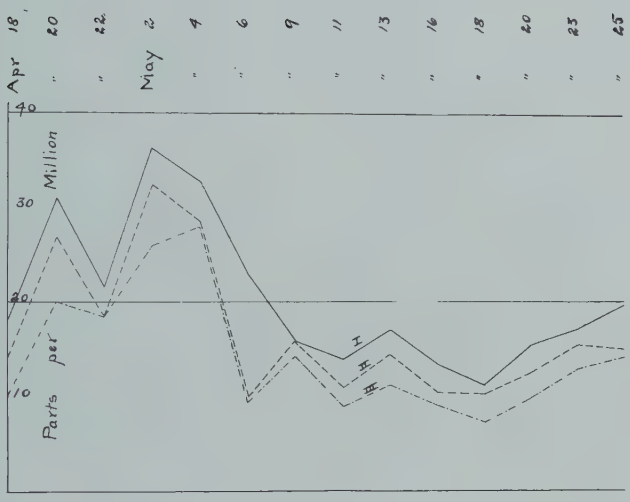


PLATE XXXVII.

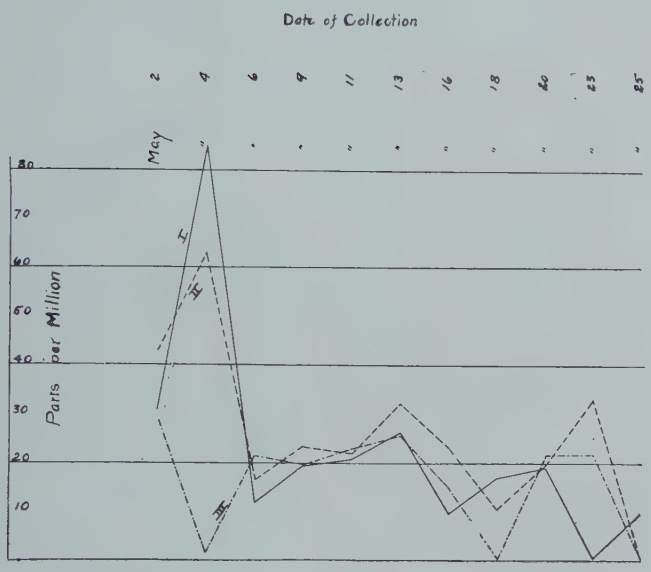


PLATE XXXVIII.

Albuminoid Ammonia

Date of Collection

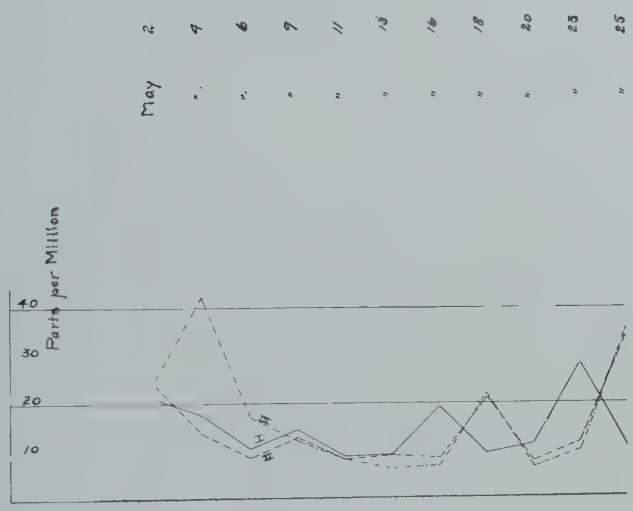


PLATE XXXIX.

Nitrogen as Nitrites

Date of Collection

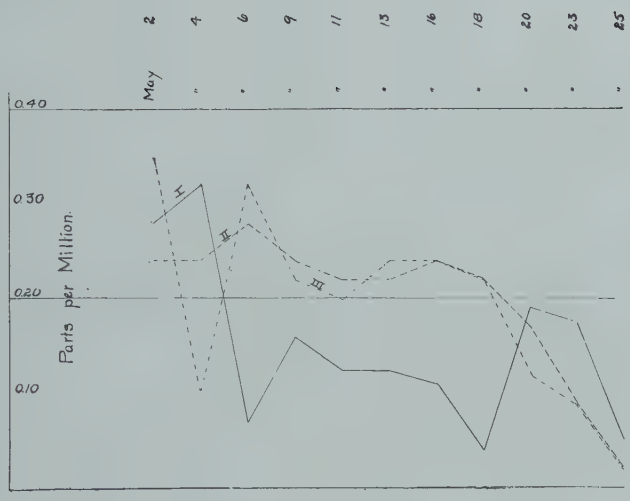
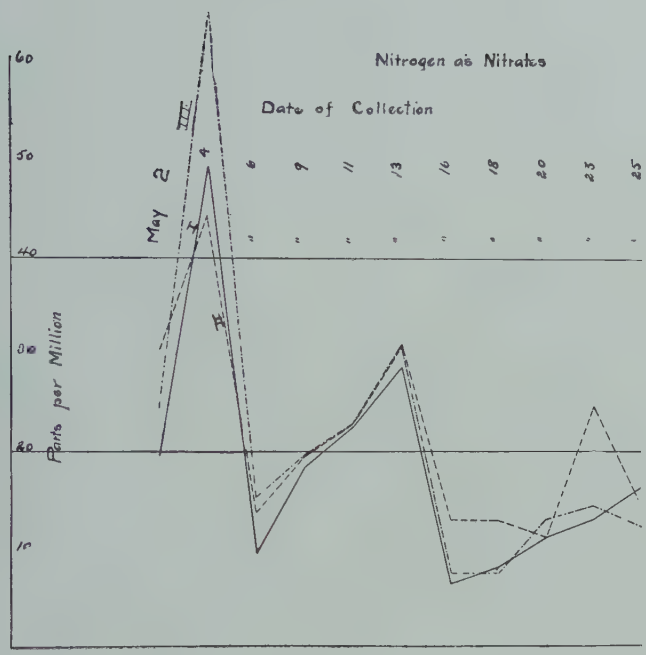


PLATE XL.


Nitrogen as Nitrates
Date of Collection
Parts per Million
60
50
40
30
20
10
May 2
4
6
9
11
13
16
18
20
23
25
I
II
III

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Vol. III, Nos. 7, 8, 9, and 10.

(Continuation of Kansas University Quarterly.)

JUNE 1906.

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